

119 West 7th Street Bloomington, Indiana 47404
(812) 349-2570



Office of the Monroe County Surveyor
2004 Geodetic Control Project
2018 Status Report

2004 GEODETIC CONTROL PROJECT

Report of Project:

Bledsoe Tapp and Riggert, Inc. was contracted in 2004 to conduct a control survey to provide State Plane Coordinates on newly established and existing points throughout Monroe County. The principal goal of this project was to determine State Plane Coordinates on Public Land Survey System corners. To develop an accurate control network this project was completed in two phases. Phase 1 of the project was establishing an accurate network of new monuments to act as the primary control for the future densification. Phase 2 of the project was utilizing the local control network created during Phase 1 to determine the State Plane Coordinates of existing Public Land Survey System corners.

Phase 1 established a network of twenty points distributed evenly throughout Monroe County. These points were primarily 30-inch long aluminum survey markers with an attached magnet placed in locations suitable for GPS observation. The controlling monuments used in the adjustment of the Phase 1 network included the HARN station located at the Grissom Municipal Airport in Lawrence County (V 281), the HARN station located at the old I.U. Skeet Range in Bloomington (BLOOMINGTON NCMN 7291), and the HARN station located 4 miles South of Martinsville along State Road 67 in Morgan County (N 13). The Indiana University Continuously Operated Reference Station in Bloomington (INDIANA UNIVERSITY CORS L1 PHASE CENTER) was also verified and accepted for use as a primary control point for this project. The Indiana High Accuracy Reference Network (HARN) stations were held fixed in the Phase 1 adjustment.

The GPS observation for this project were made with four Topcon dual-frequency receivers. All raw data was processed and adjusted using Pinnacle Post-Processing Software. All of the stations in the Phase 1 network were occupied a minimum of two times and occupation sessions were in excess of two hours per point. The minimum positional accuracy for this project was 1:100000 (10ppm). A much higher degree of accuracy was achieved throughout this project. The probable horizontal error associated with the Phase 1 control is less than 0.1'. The probable vertical error associated with the Phase 1 control is less than 0.2'. All of the data published as part of the project is referenced to NAD83 U.S. survey feet, and NAVD88.

The second phase of this project utilized the Phase 1 control point in the establishment of State Plane Coordinates on existing Public Land Survey System corners. Existing corners were recovered throughout the county and tied to State Plane Coordinates. An effort was made to evenly distribute the points throughout the county. In some parts of the county this was difficult due to the availability of corners with good sky visibility. The Phase 2 points were adjusted to the Phase 1 control points.

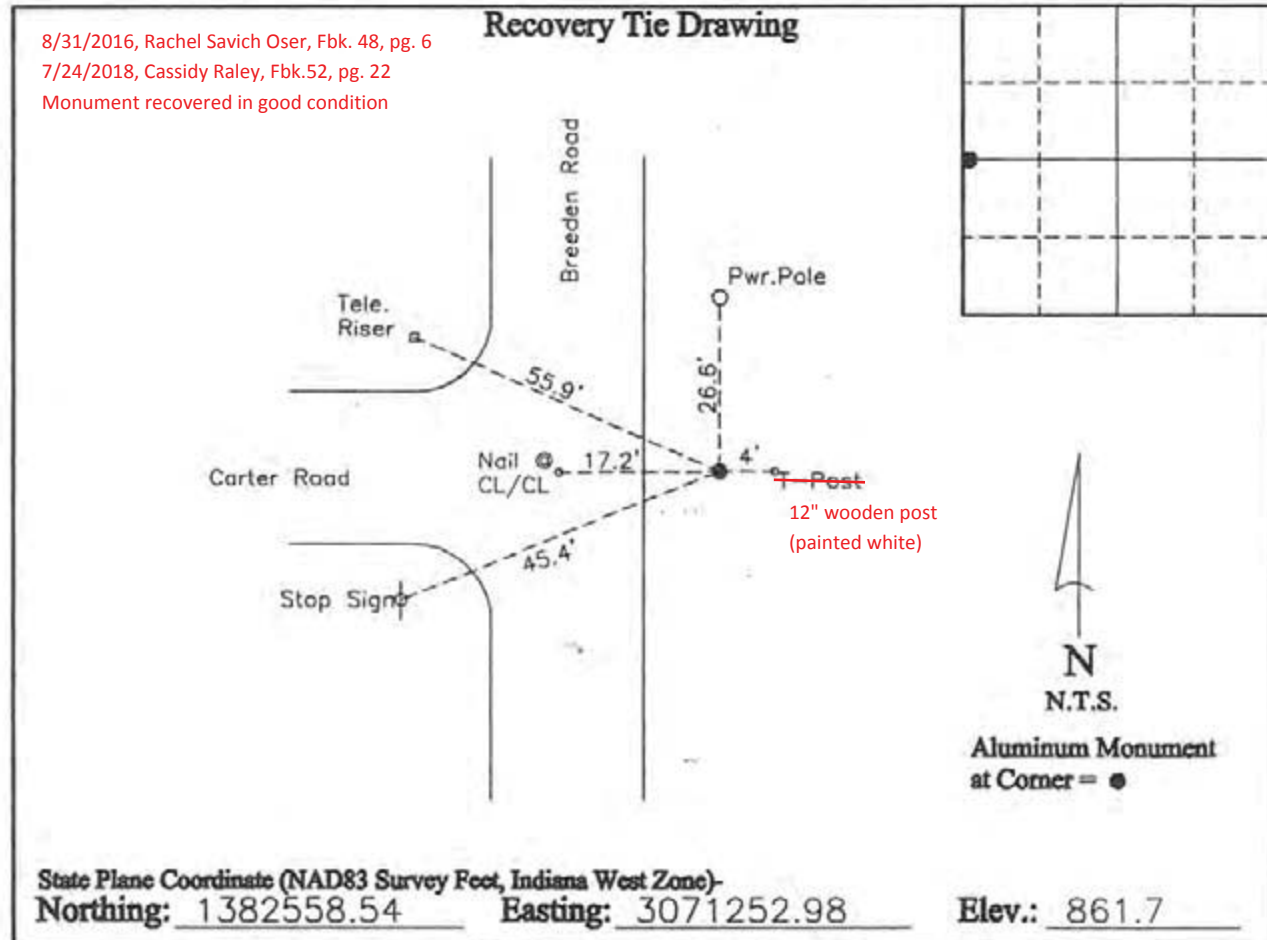
Corner I.D. # 100T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 17, Township 7N, Range 2W,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)



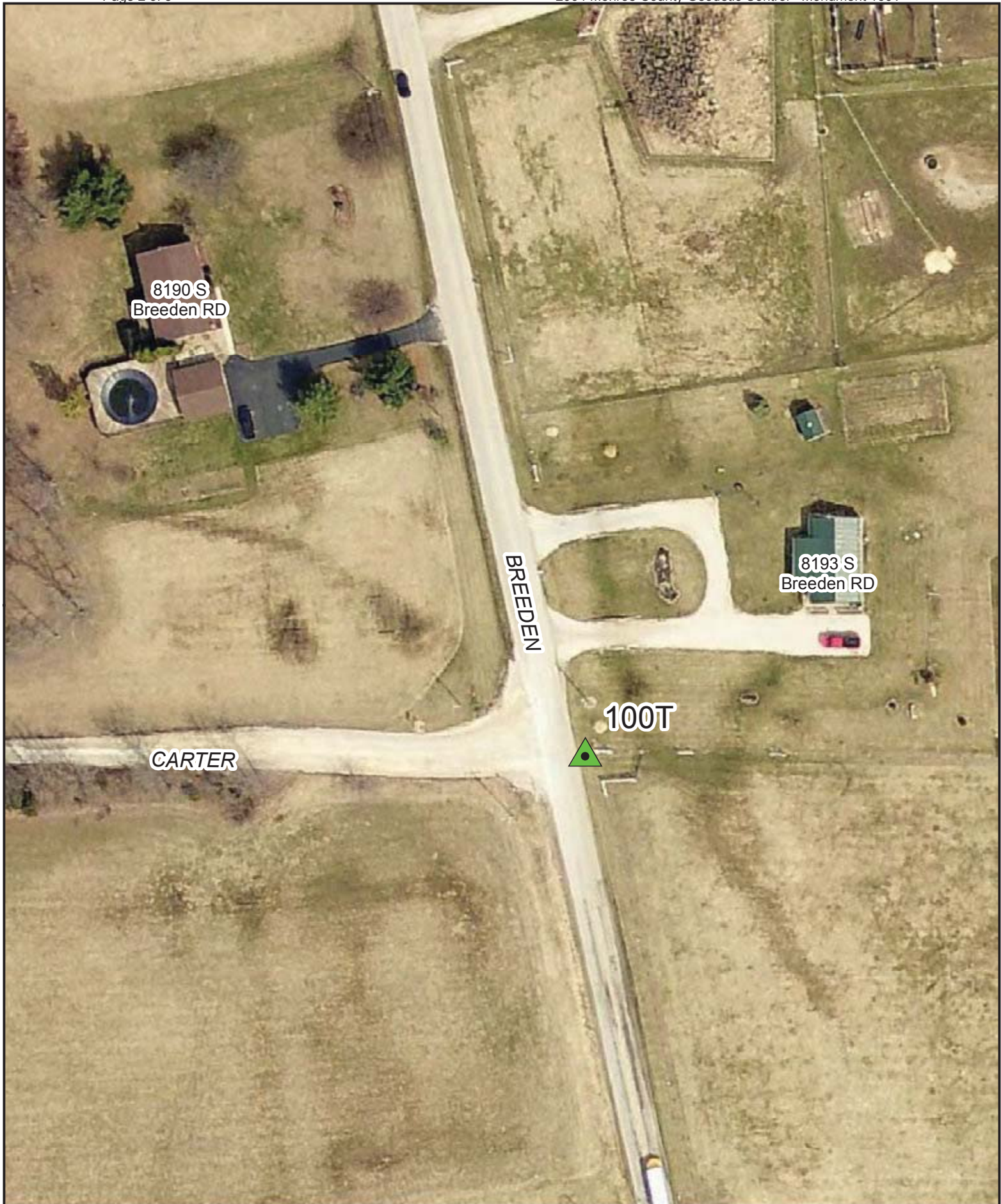
I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper

 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Tarkenton*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 101T

MONUMENT RECORD

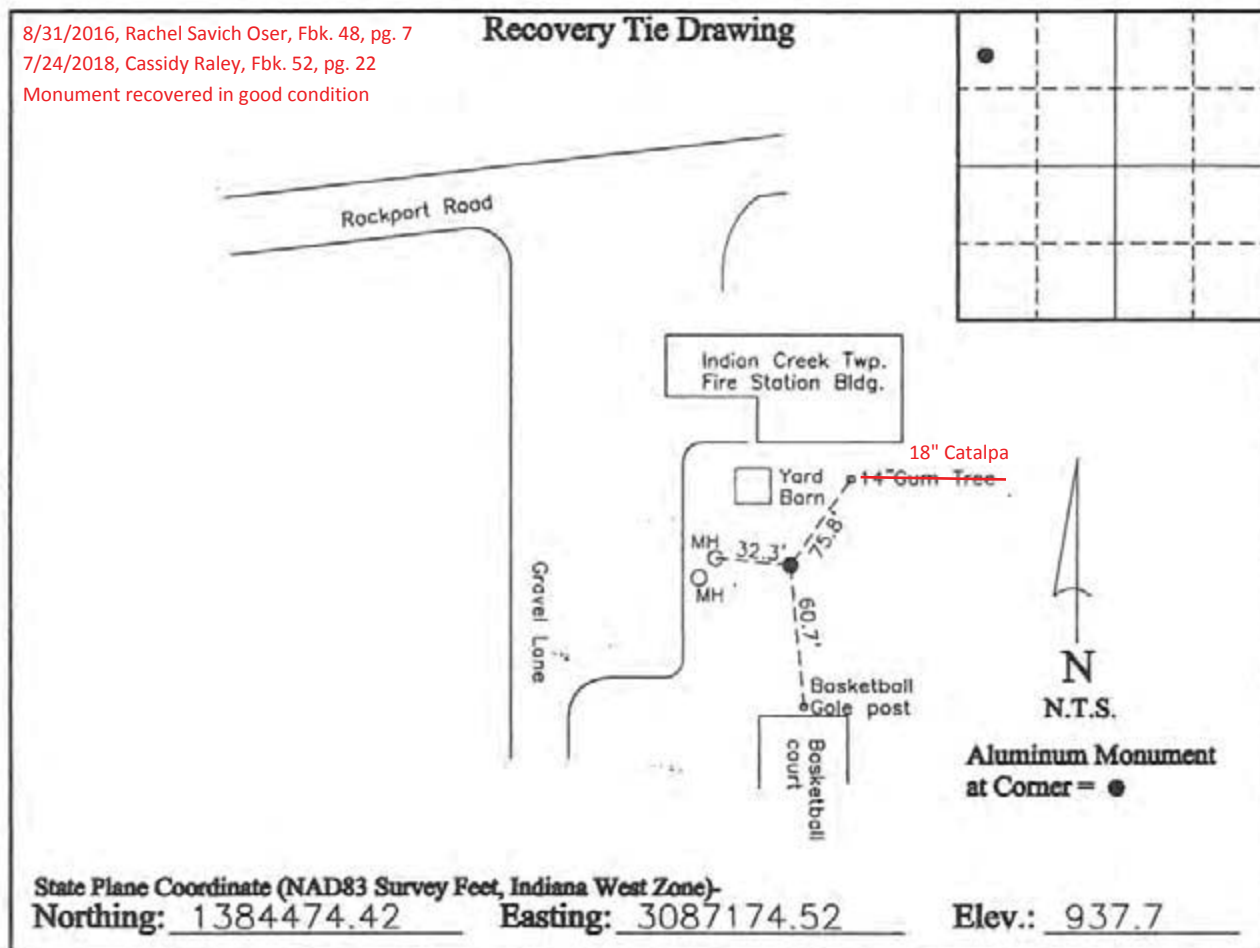
STATE OF INDIANA ~ COUNTY OF MONROE

Section 14, Township 7N, Range 2W,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

8/31/2016, Rachel Savich Oser, Fbk. 48, pg. 7

7/24/2018, Cassidy Raley, Fbk. 52, pg. 22

Monument recovered in good condition



I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Tankers*



0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



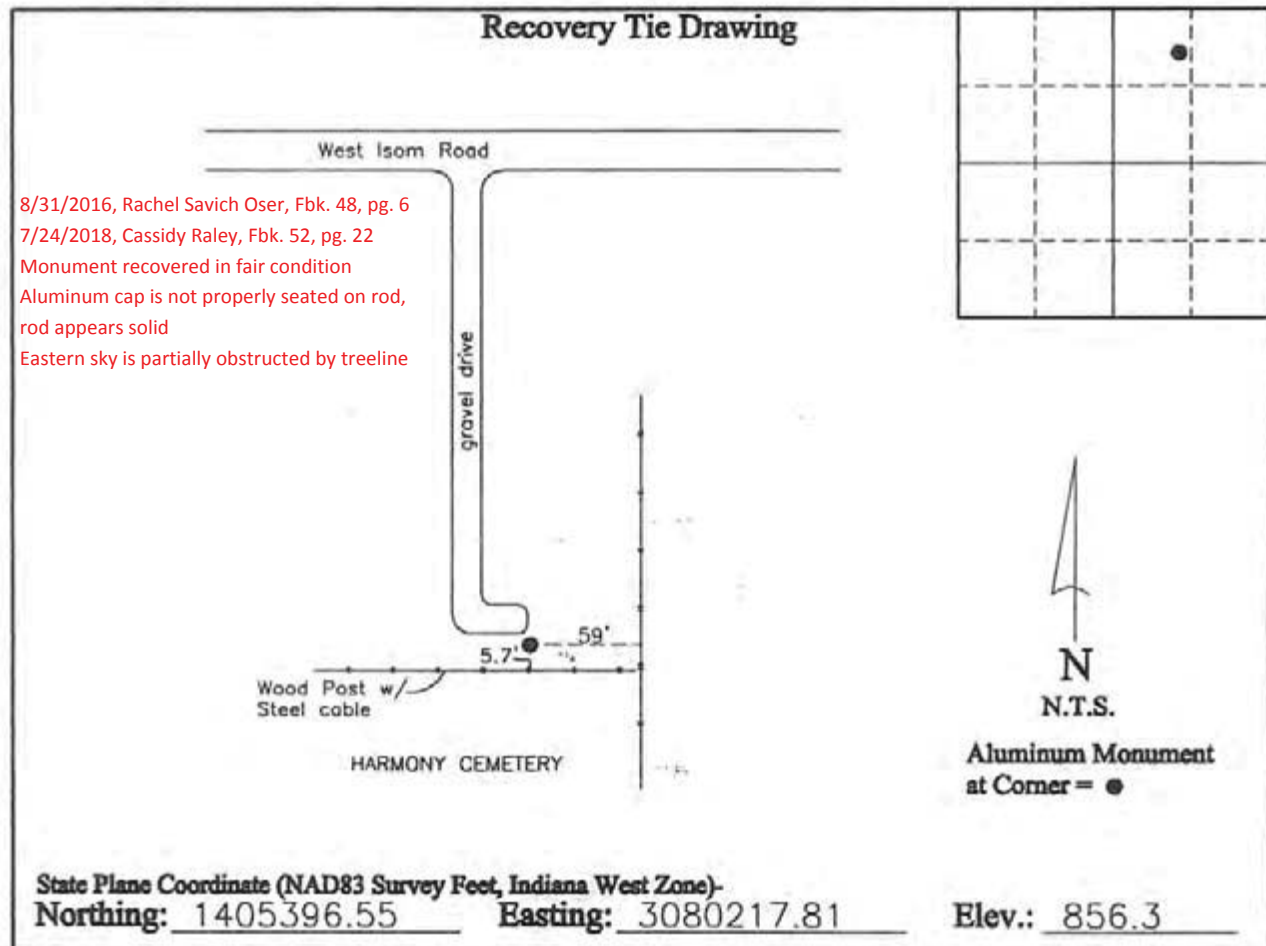
Corner I.D. # 102T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 28, Township 8N, Range 2W,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)



I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Stu Vitarkus*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



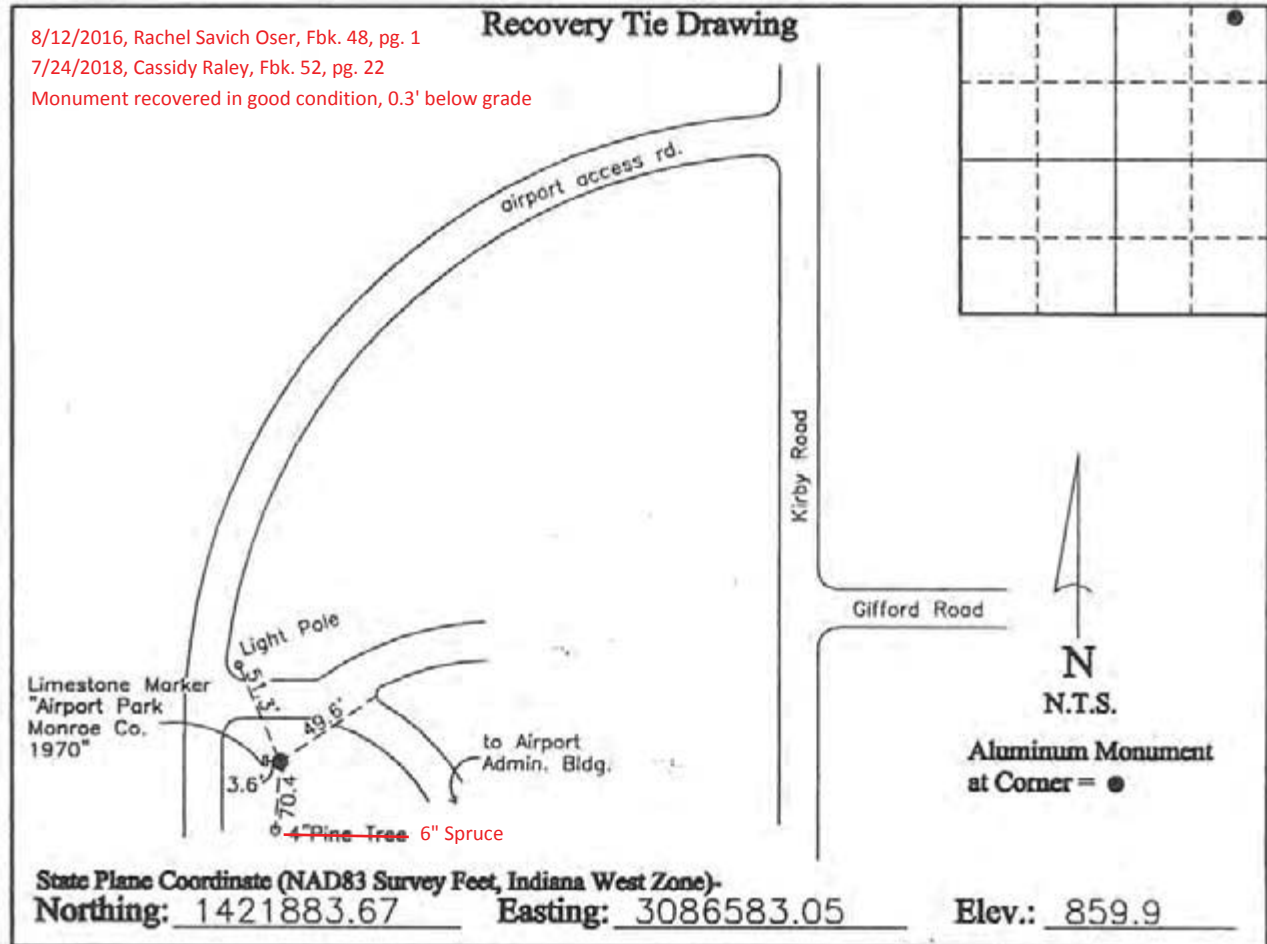
Corner I.D. # 103T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 10 , Township 8N , Range 2W ,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

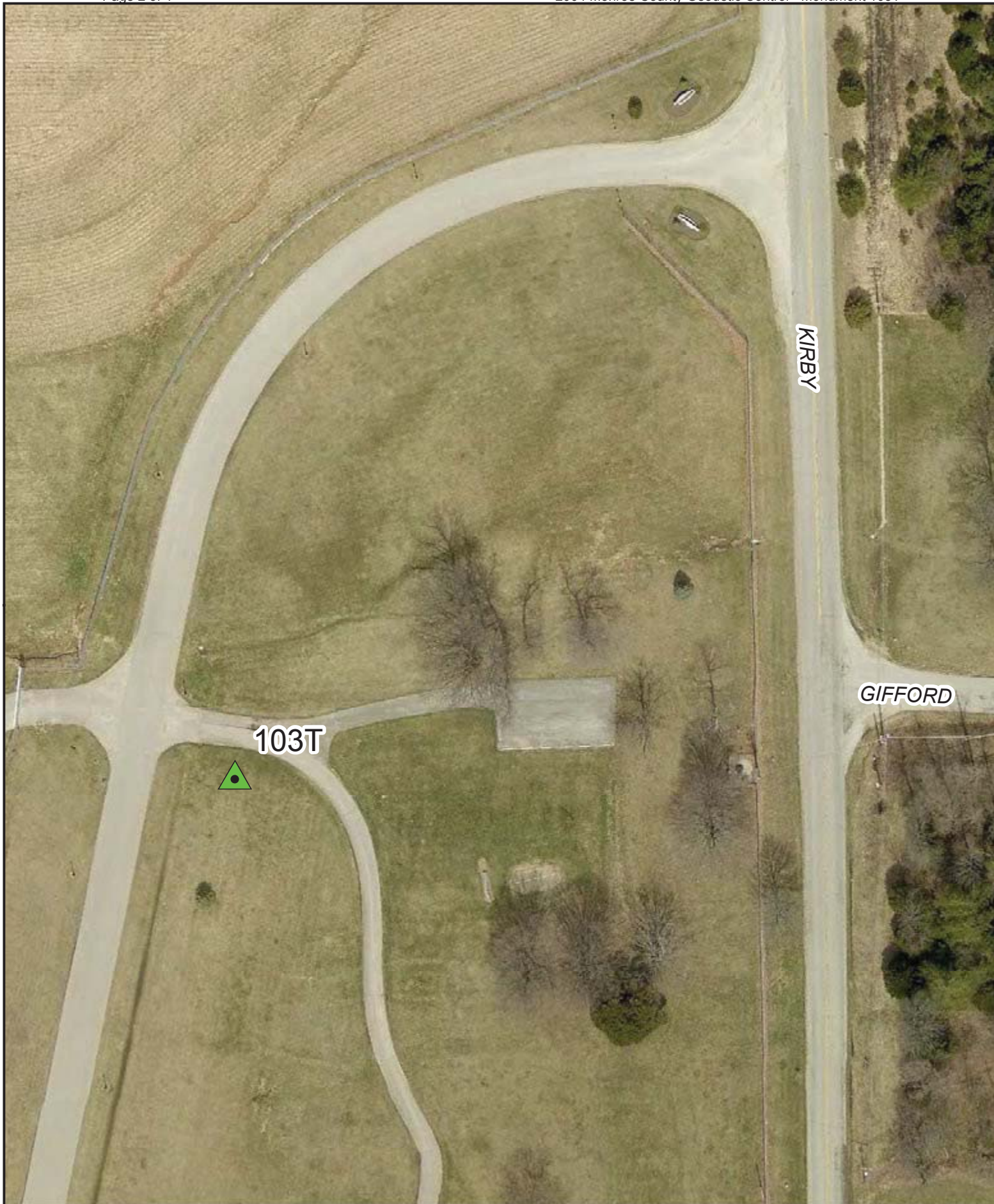


I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED BY *Steve Tanks*





0 50 100 200 Feet

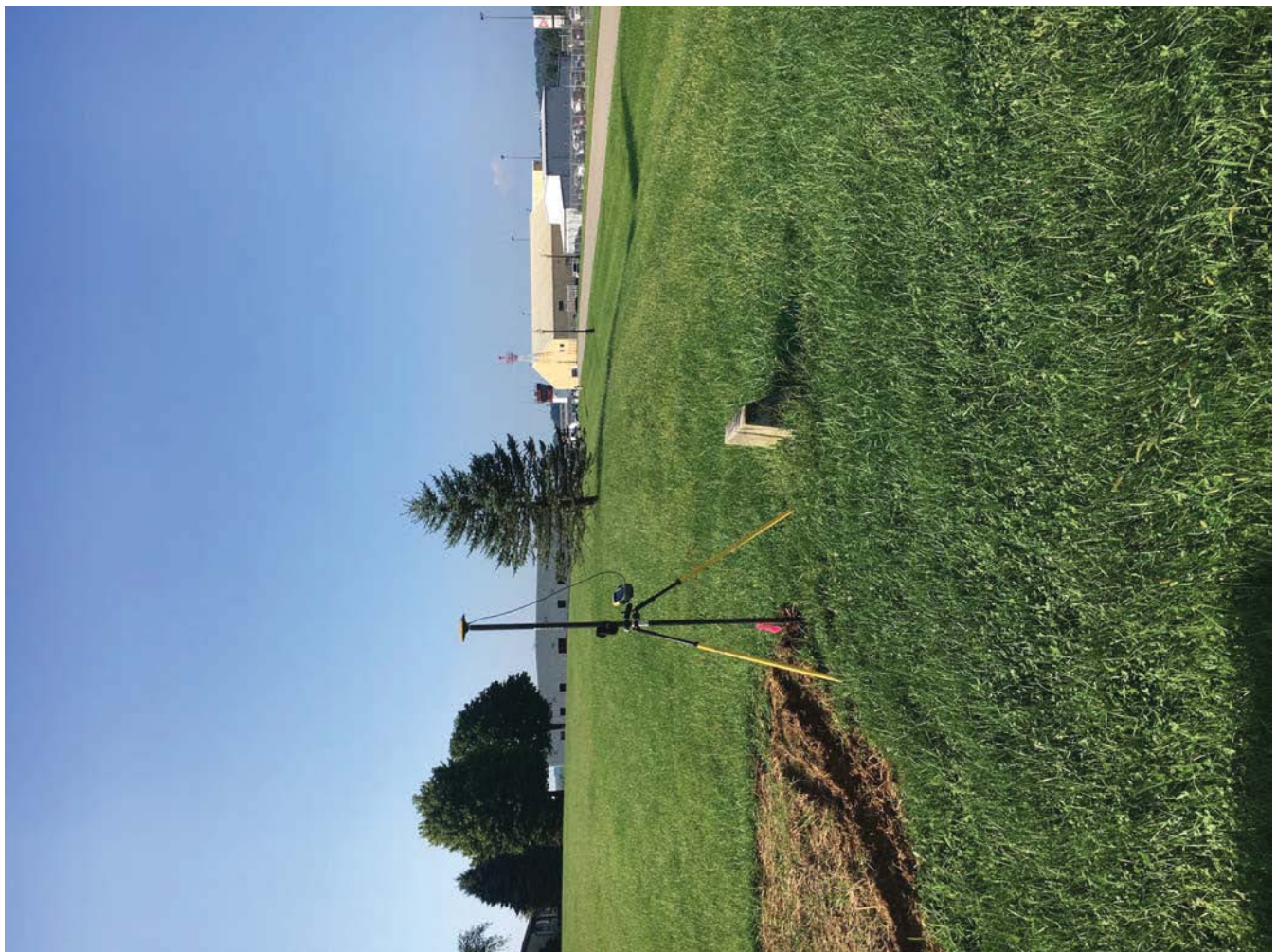


Office of the Monroe County Surveyor
2004 Geodetic Control Project

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/30/2017





Corner I.D. # 104T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

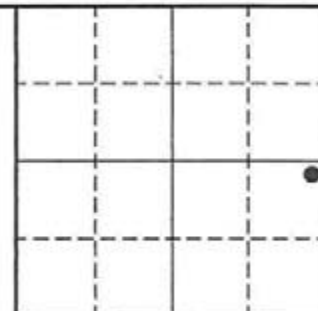
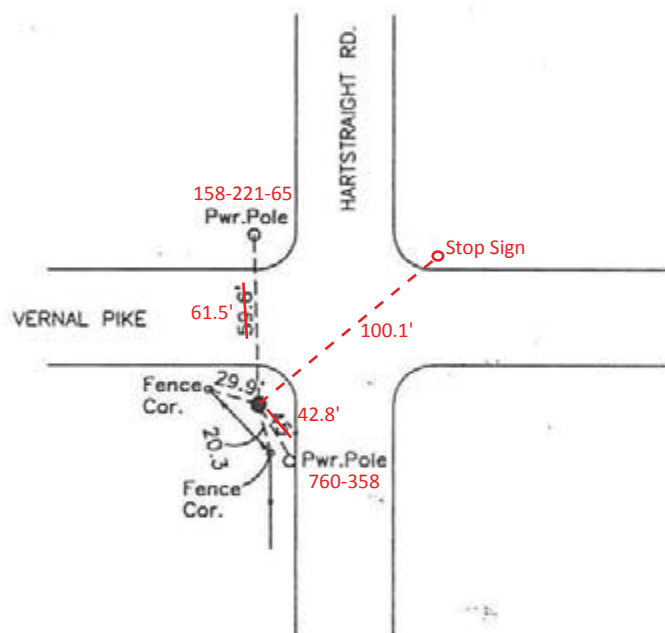
Section 27 , Township 9N , Range 2W ,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

8/12/2016, Rachel Savich Oser, Fbk. 48, pg. 2

7/24/2018, Cassidy Raley, Fbk. 52, pg. 22

Monument recovered in good condition

Monument is below a transmission line and is not suitable for static work

Recovery Tie DrawingAluminum Monument
at Corner = ●

State Plane Coordinate (NAD83 Survey Feet, Indiana West Zone)-

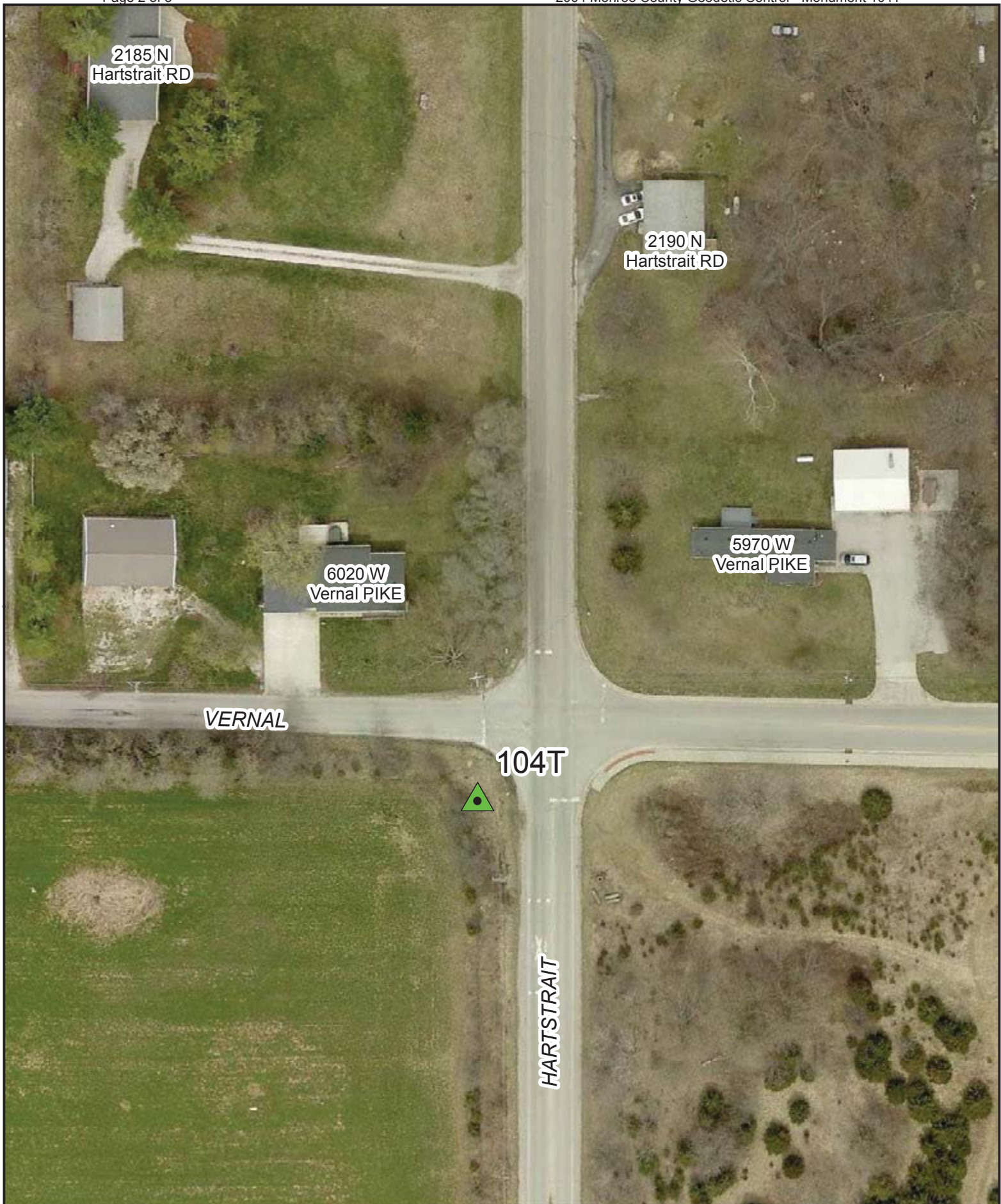
Northing: 1434788.70Easting: 3086519.90Elev.: 832.8

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June , 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve U. Farker*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 106T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 12 , Township 8N , Range 1W ,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

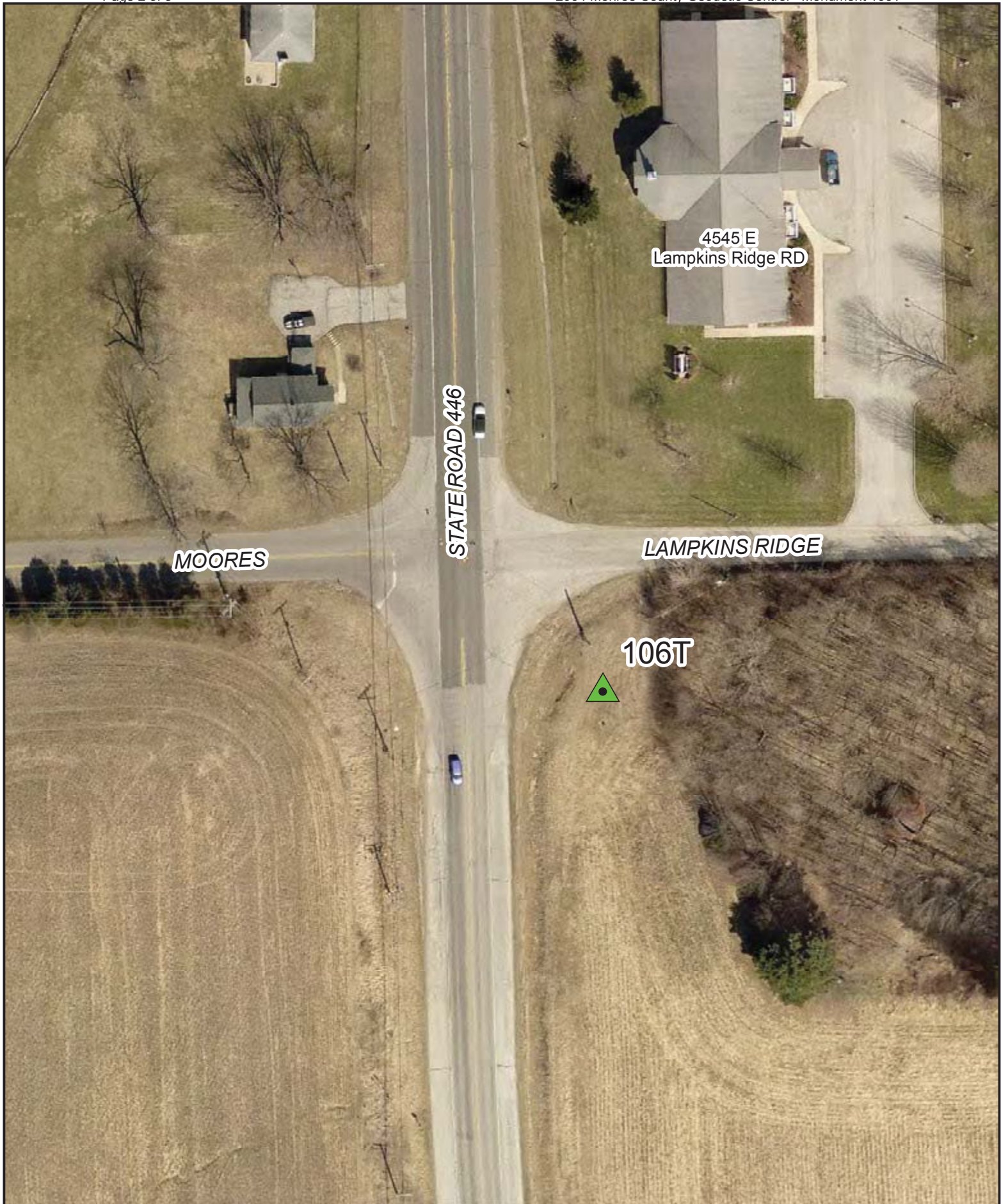
Recovery Tie Drawing	
<p>8/23/2016, Rachel Savich Oser, Fbk. 48, pg. 4 7/25/2018, Cassidy Raley, Fbk. 52, pg. 22 Monument recovered flush with ground, appears to have been disturbed. Cap is still connected to rod, but the whole thing is crooked</p>	
<p>State Plane Coordinate (NAD83 Survey Feet, Indiana West Zone)- Northing: <u>1421719.46</u> Easting: <u>3126377.48</u> Elev.: <u>847.3</u></p>	

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Indiana Registered Land Surveyor No. LS20200079

COMPLETED By Stuart Tankers





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



8/23/2016, Rachel Savich Oser, Fbk. 48, pg. 4

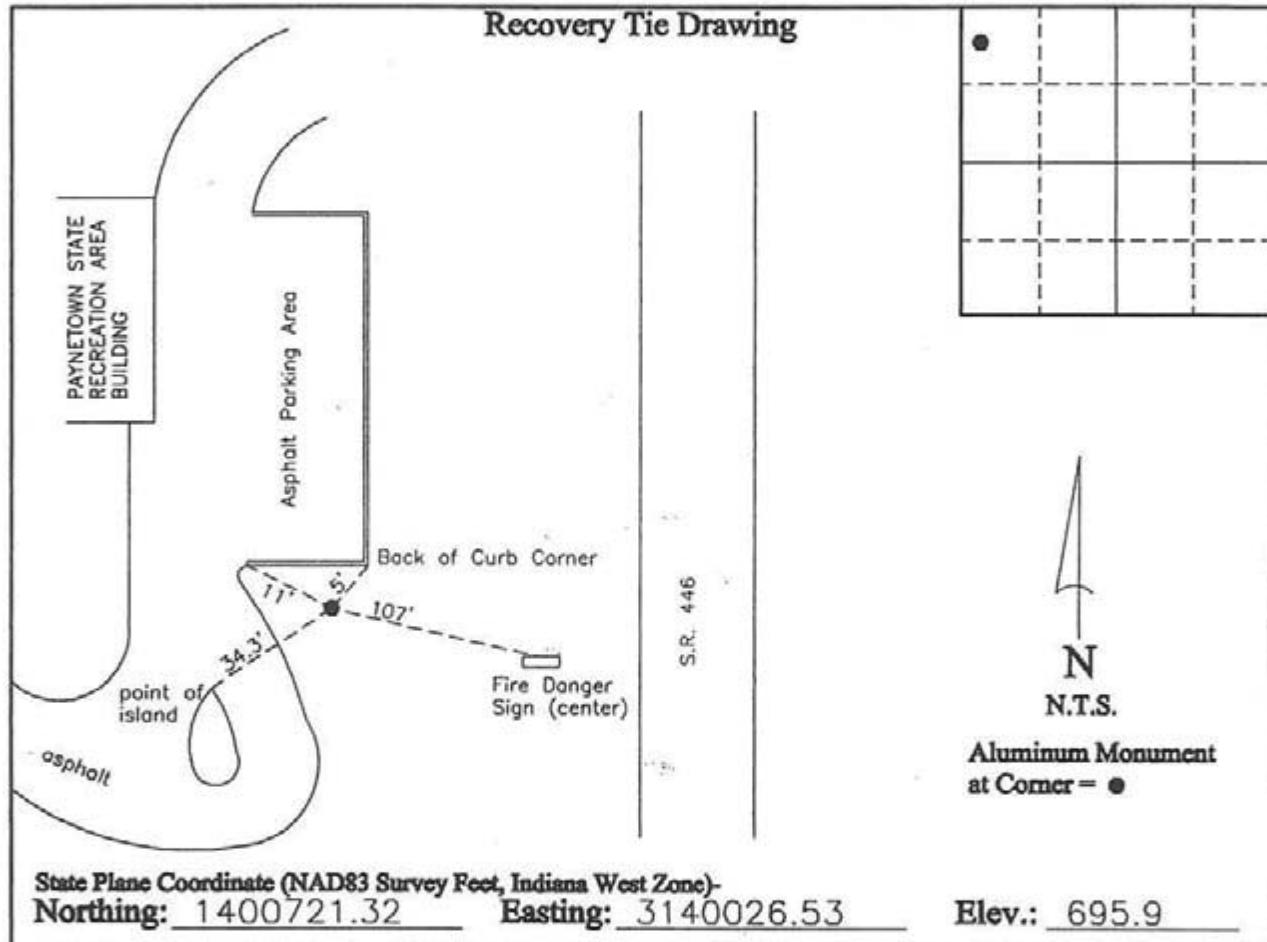
7/25/2018, Cassidy Raley, Fbk. 52, pg. 22

Monument recovered in good condition, 0.2' below grade

Corner I.D. # 107T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

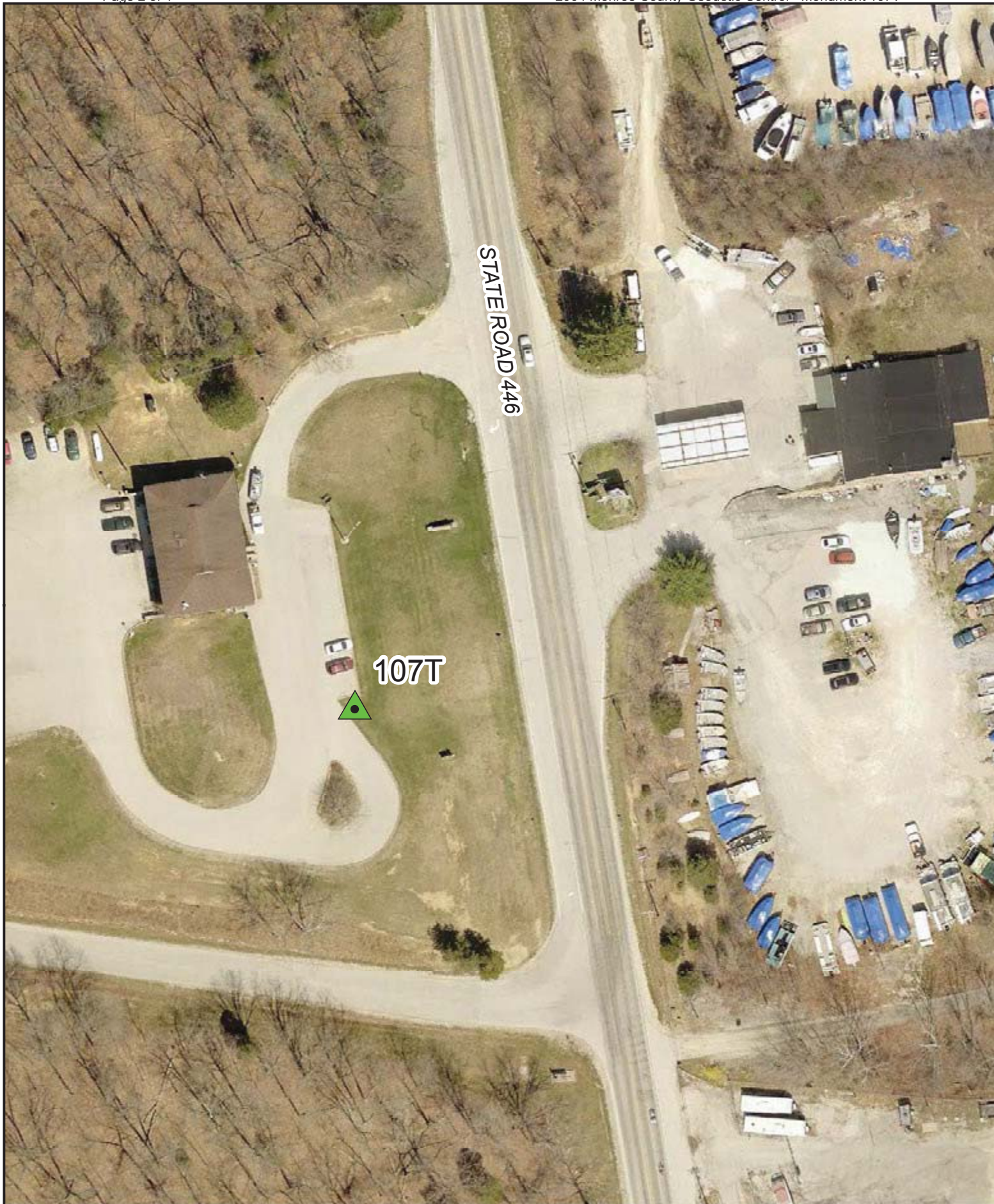
Section 33, Township 8N, Range 1E,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Tanks*





0 50 100 200 Feet



Office of the Monroe County Surveyor
2004 Geodetic Control Project

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/30/2017





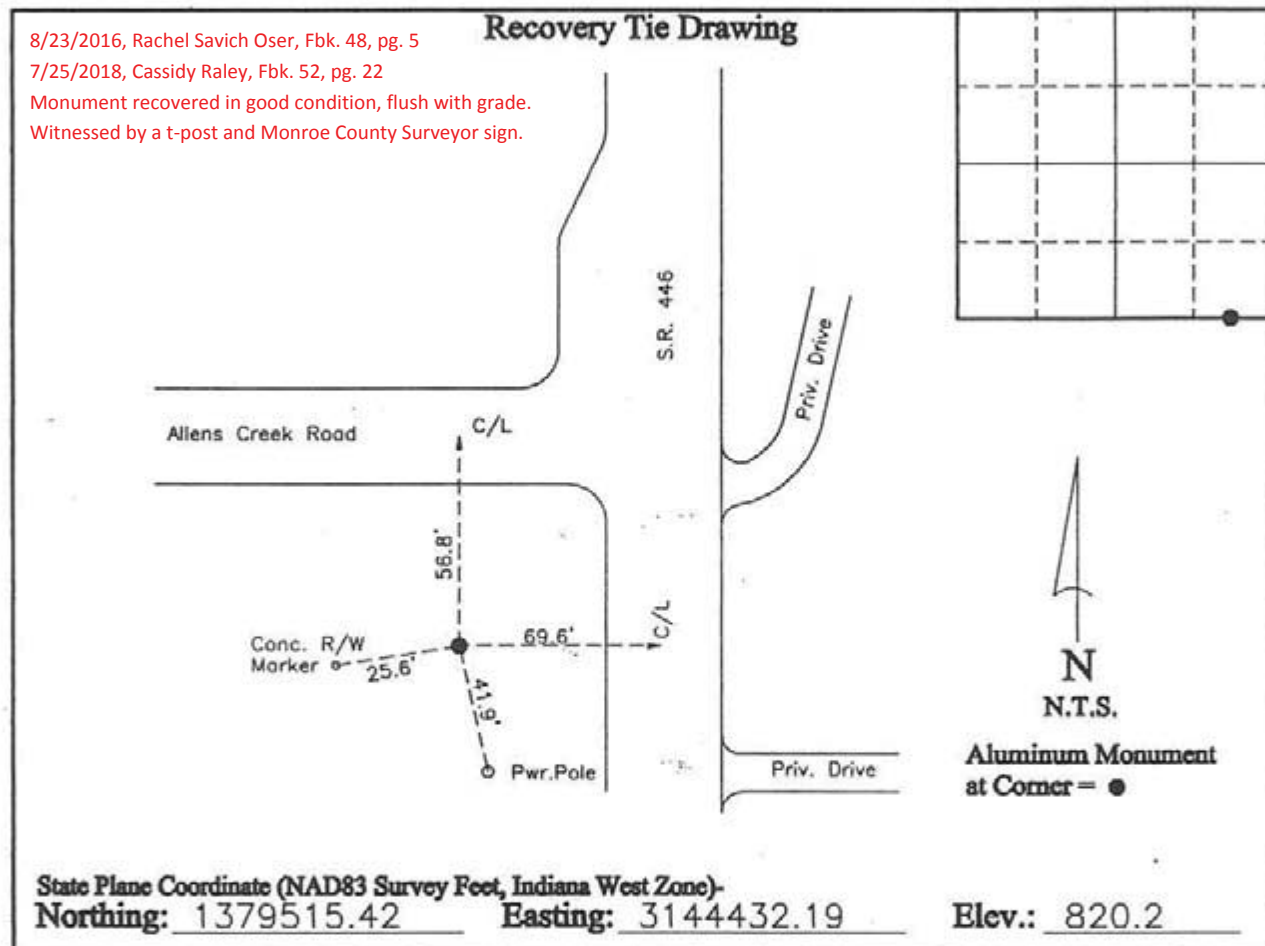
Corner I.D. # 108T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 16, Township 7N, Range 1E,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)



I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Tankers*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570





8/31/2016, Rachel Savich Oser, Fbk. 48, pg. 7

8/23/2018, Cassidy Raley, Fbk. 52, pg. 22

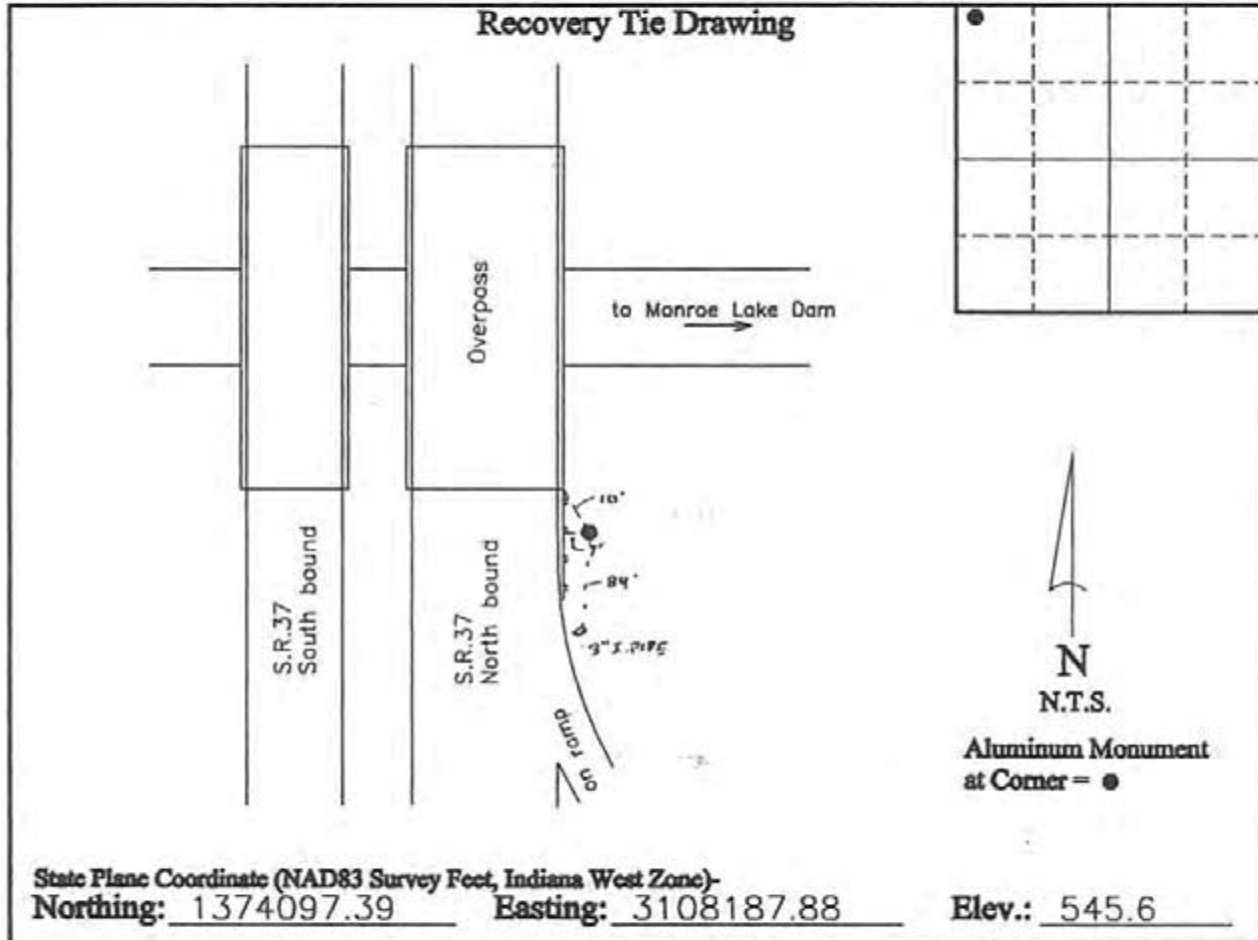
Monument recovered in good condition, 0.4' below grade

Added t-post and MCSO Sign

Corner I.D. # 109T

MONUMENT RECORD

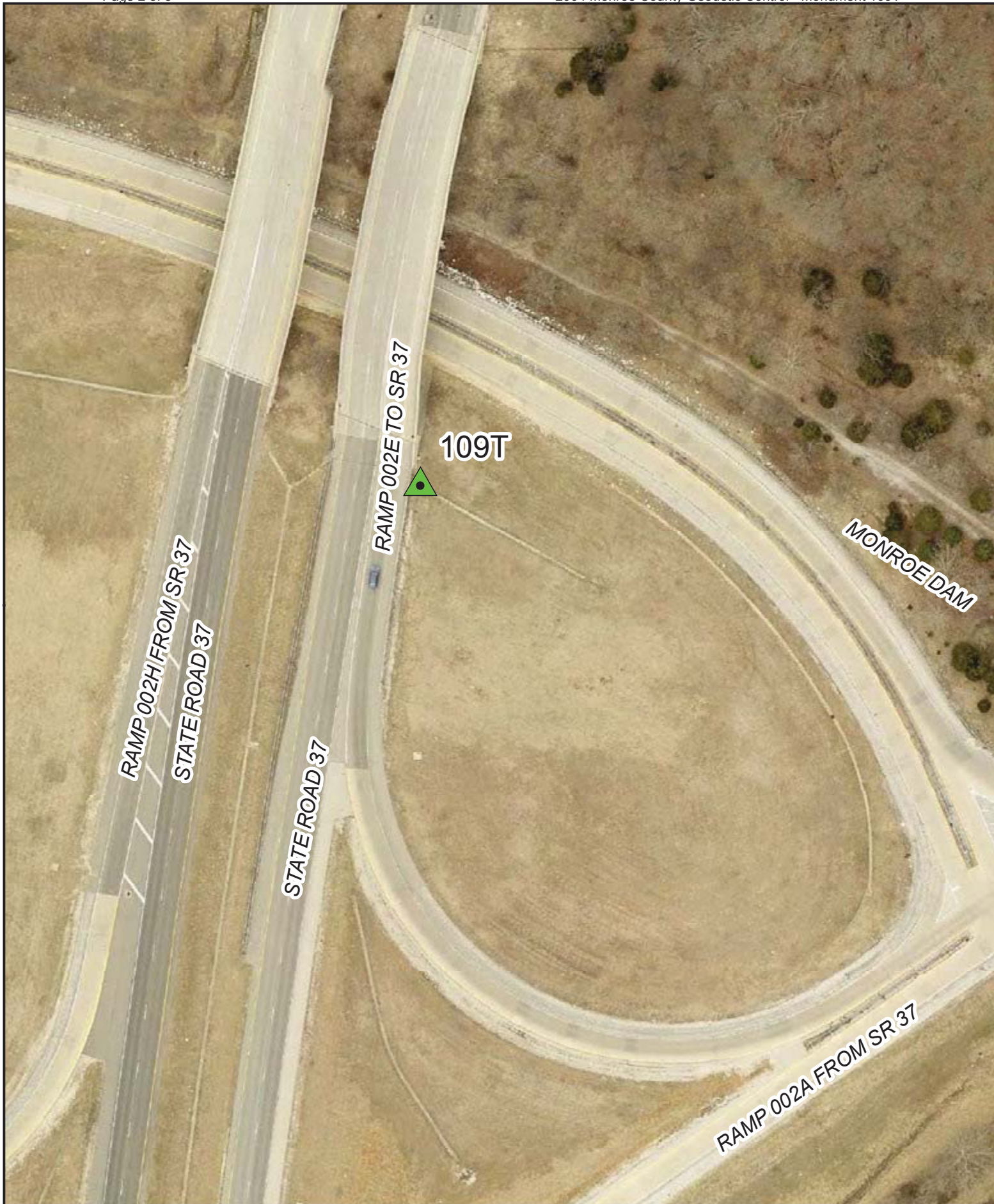
STATE OF INDIANA ~ COUNTY OF MONROE

Section 28, Township 7N, Range 1W,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *St. V. Tanks*



0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

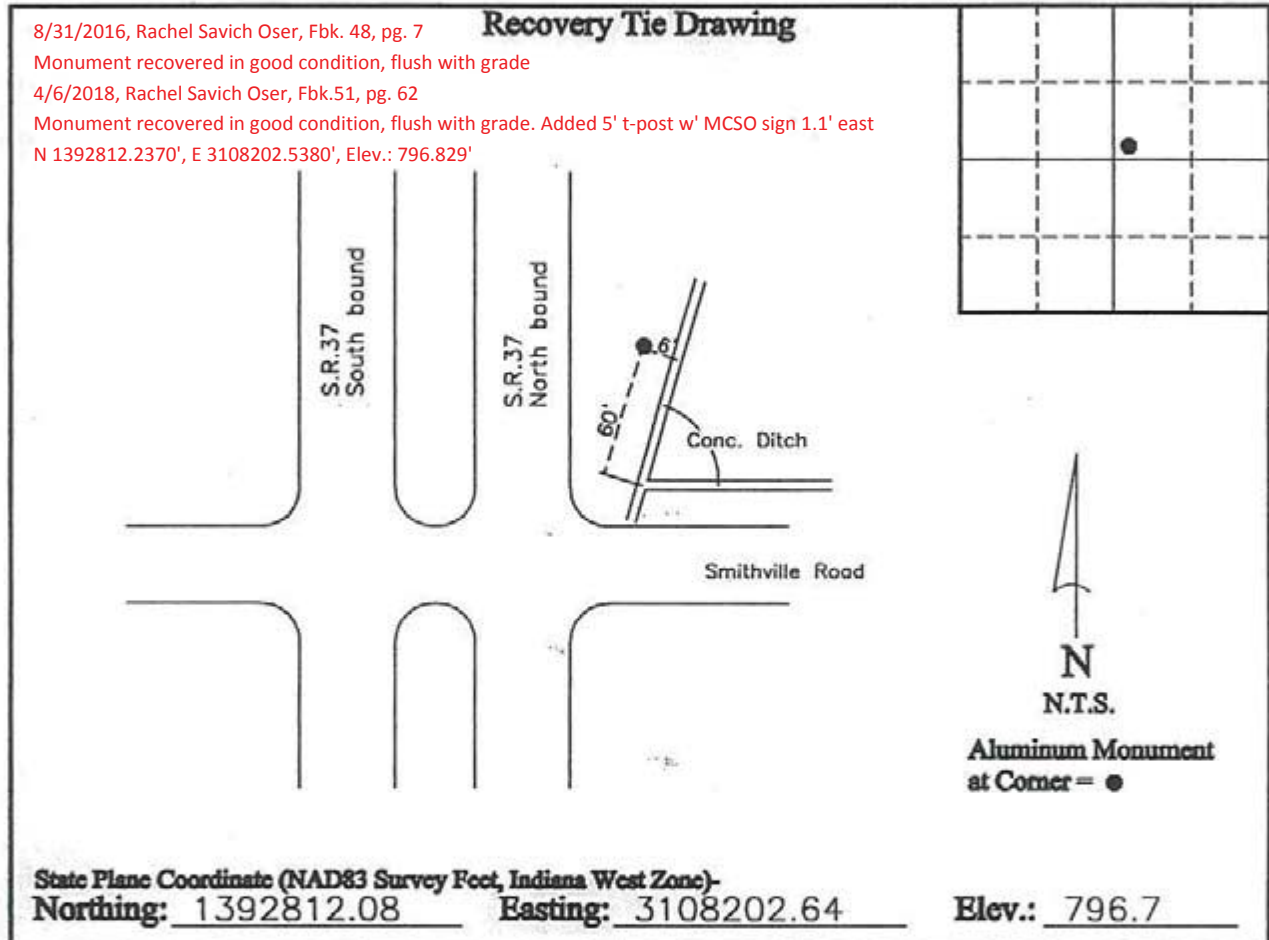
119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 110T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 5, Township 7N, Range 1W,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

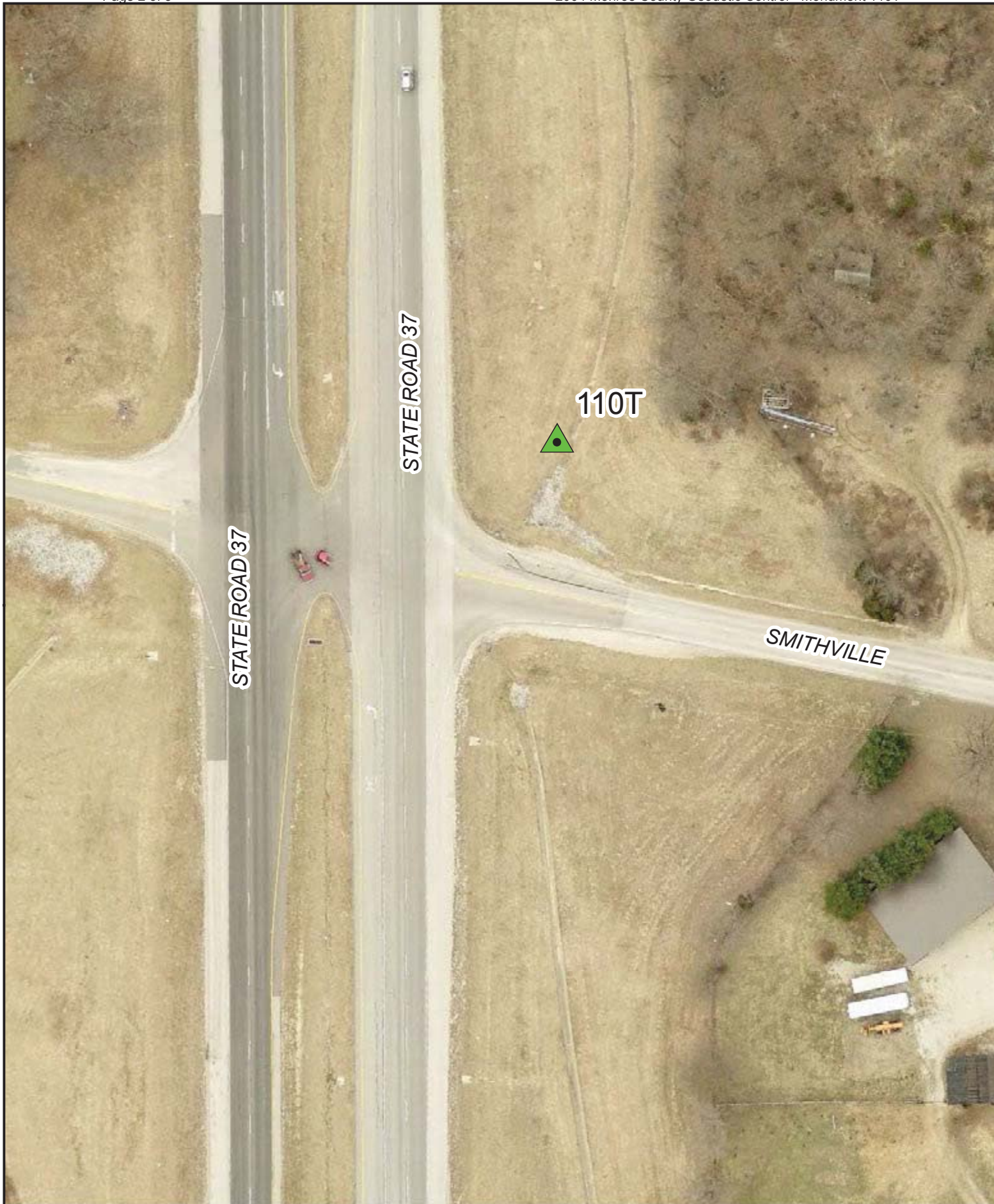
I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper

Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Stu V. Tankers*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 111T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

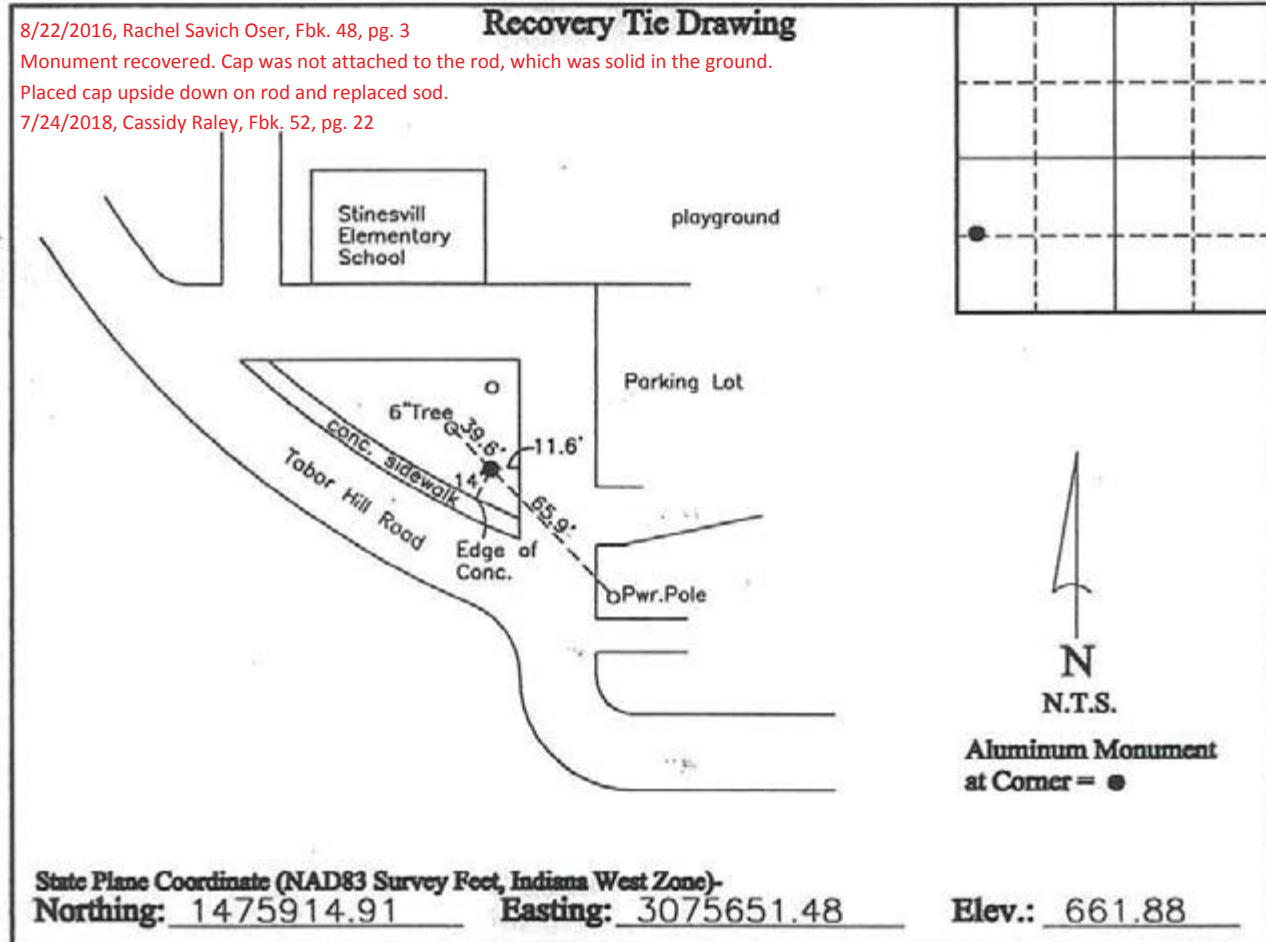
Section 16, Township 10N, Range 2W,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

8/22/2016, Rachel Savich Oser, Fbk. 48, pg. 3

Monument recovered. Cap was not attached to the rod, which was solid in the ground.

Placed cap upside down on rod and replaced sod.

7/24/2018, Cassidy Raley, Fbk. 52, pg. 22

Recovery Tie Drawing

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Tankers*





0 50 100 200 Feet



Office of the Monroe County Surveyor
2004 Geodetic Control Project

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/30/2017



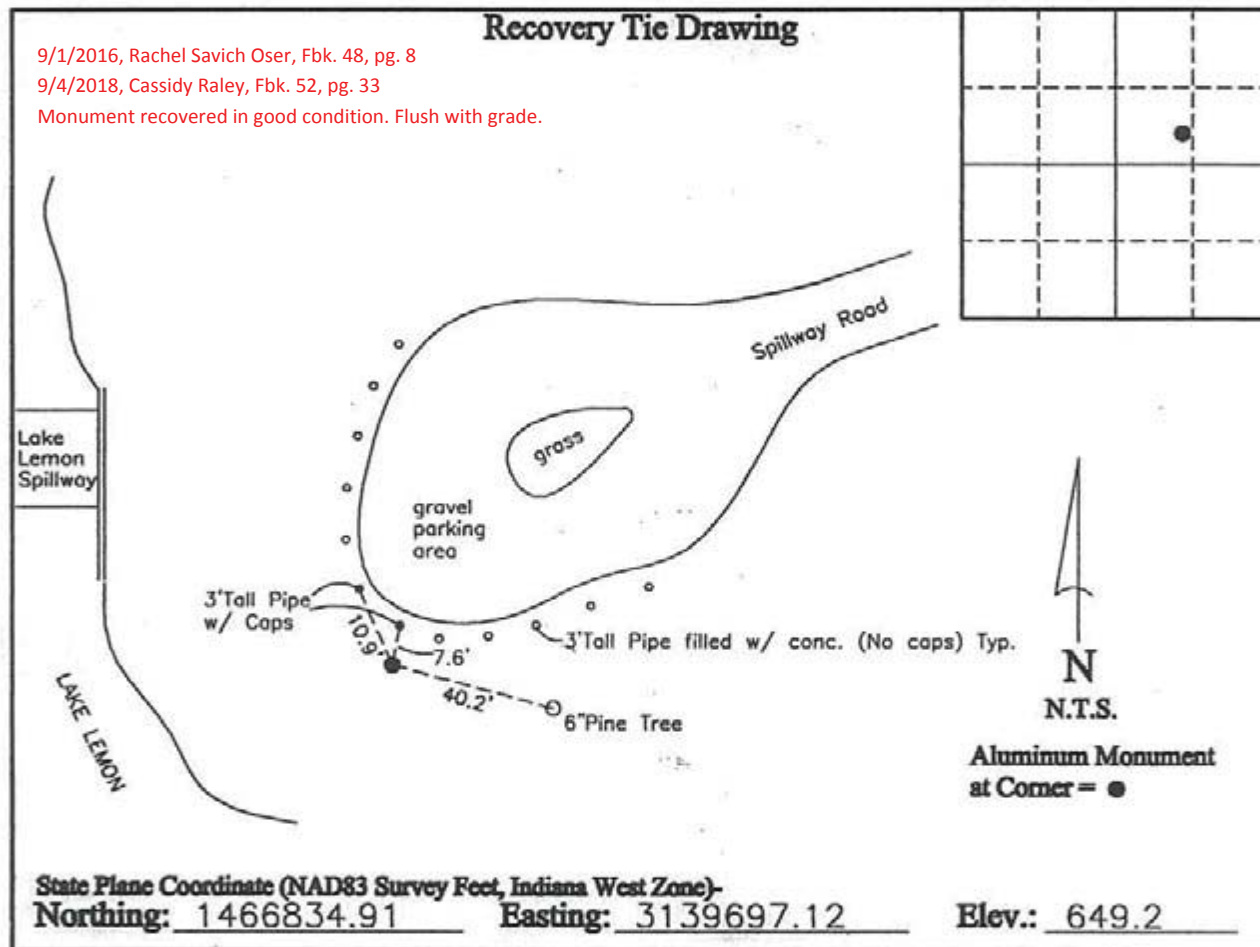
Corner I.D. # 113T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 28, Township 10N, Range 1E,

Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)



I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve V. Tankers*





0 50 100 200 Feet



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

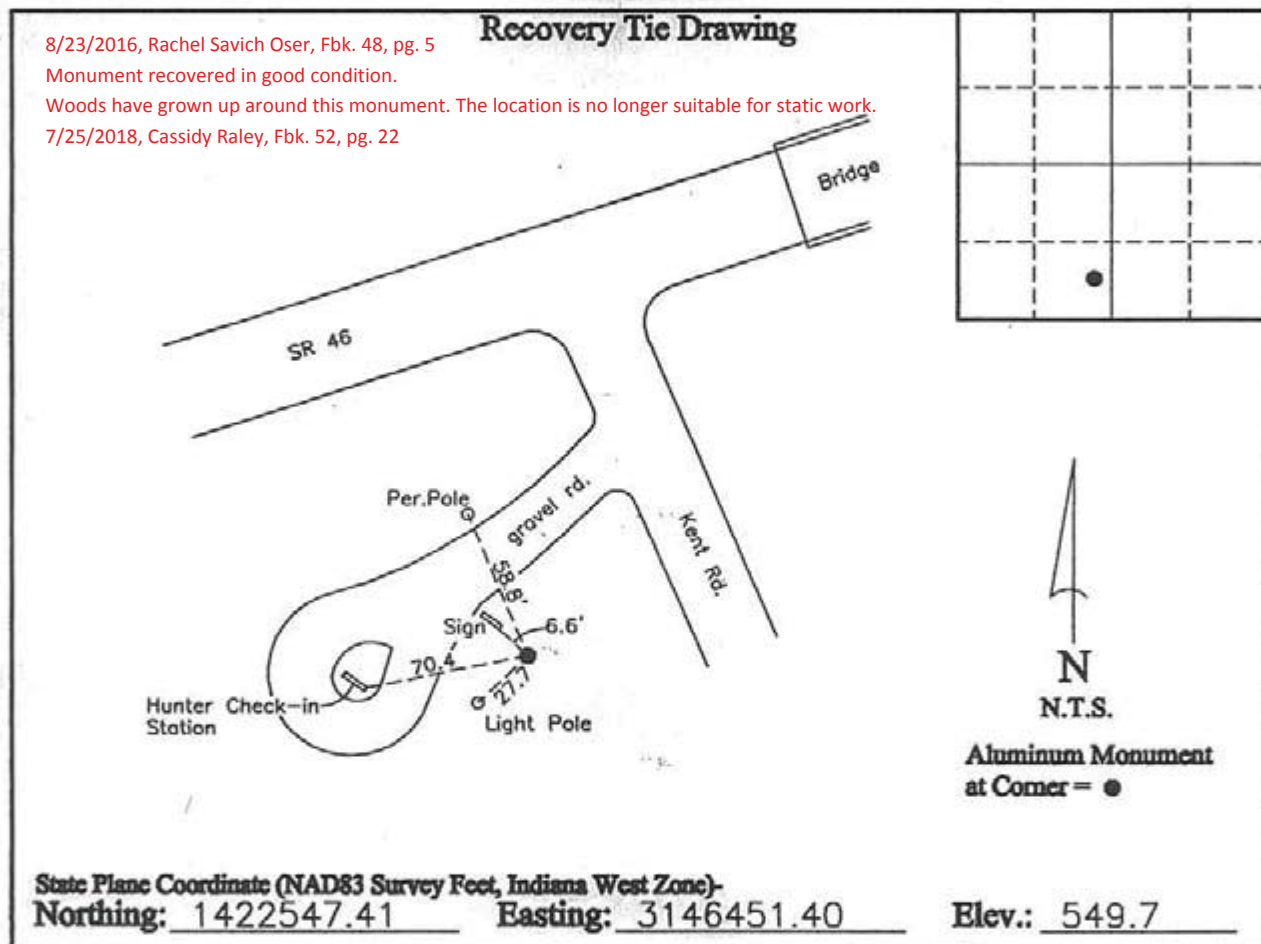
Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/30/2017



Corner I.D. # 115T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

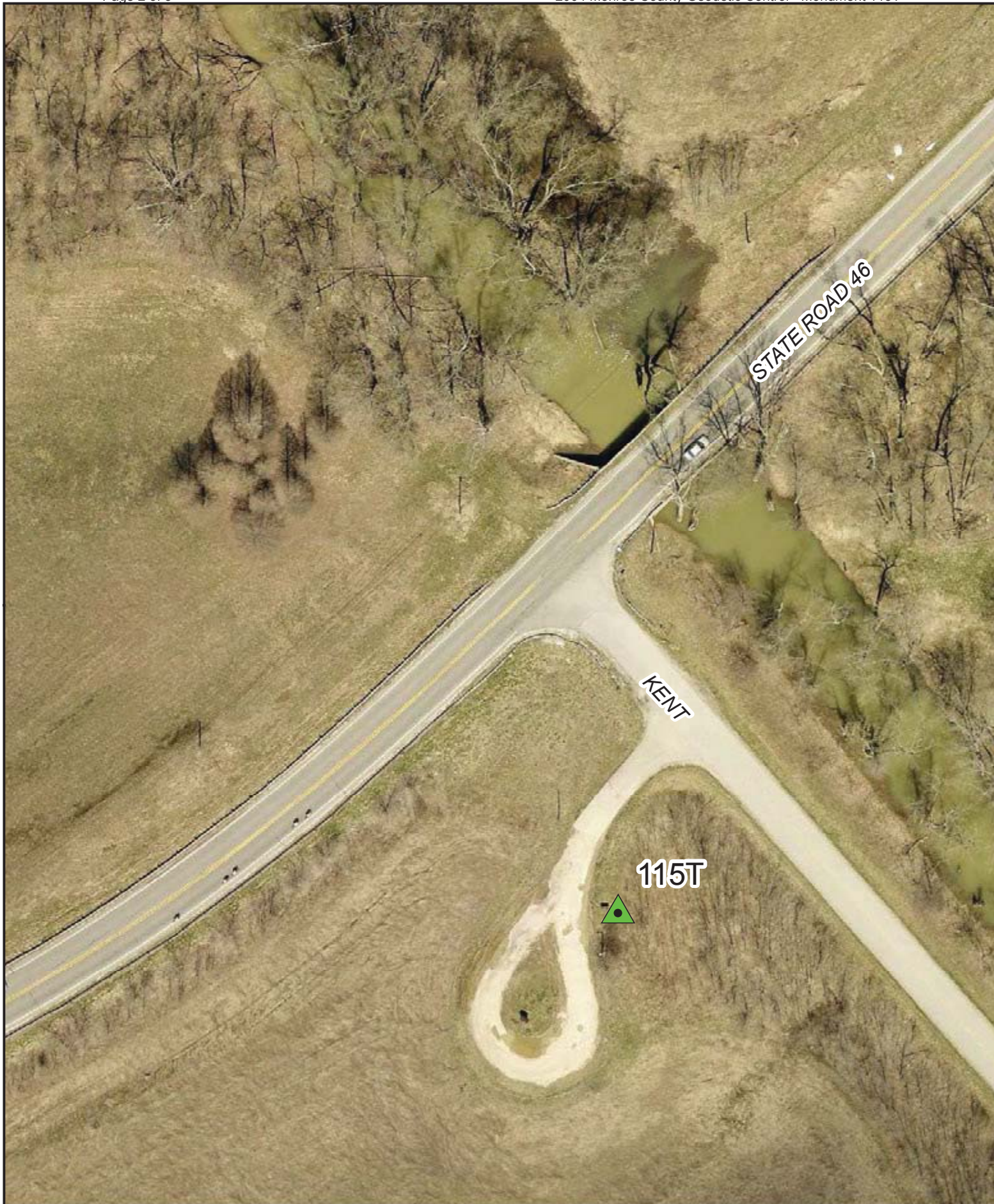
Section 3, Township 8N, Range 1E,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
Indiana Registered Land Surveyor No. LS20200079

COMPLETED BY *Steve Tanks*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



Office of the Monroe County Surveyor
2004 Geodetic Control Project

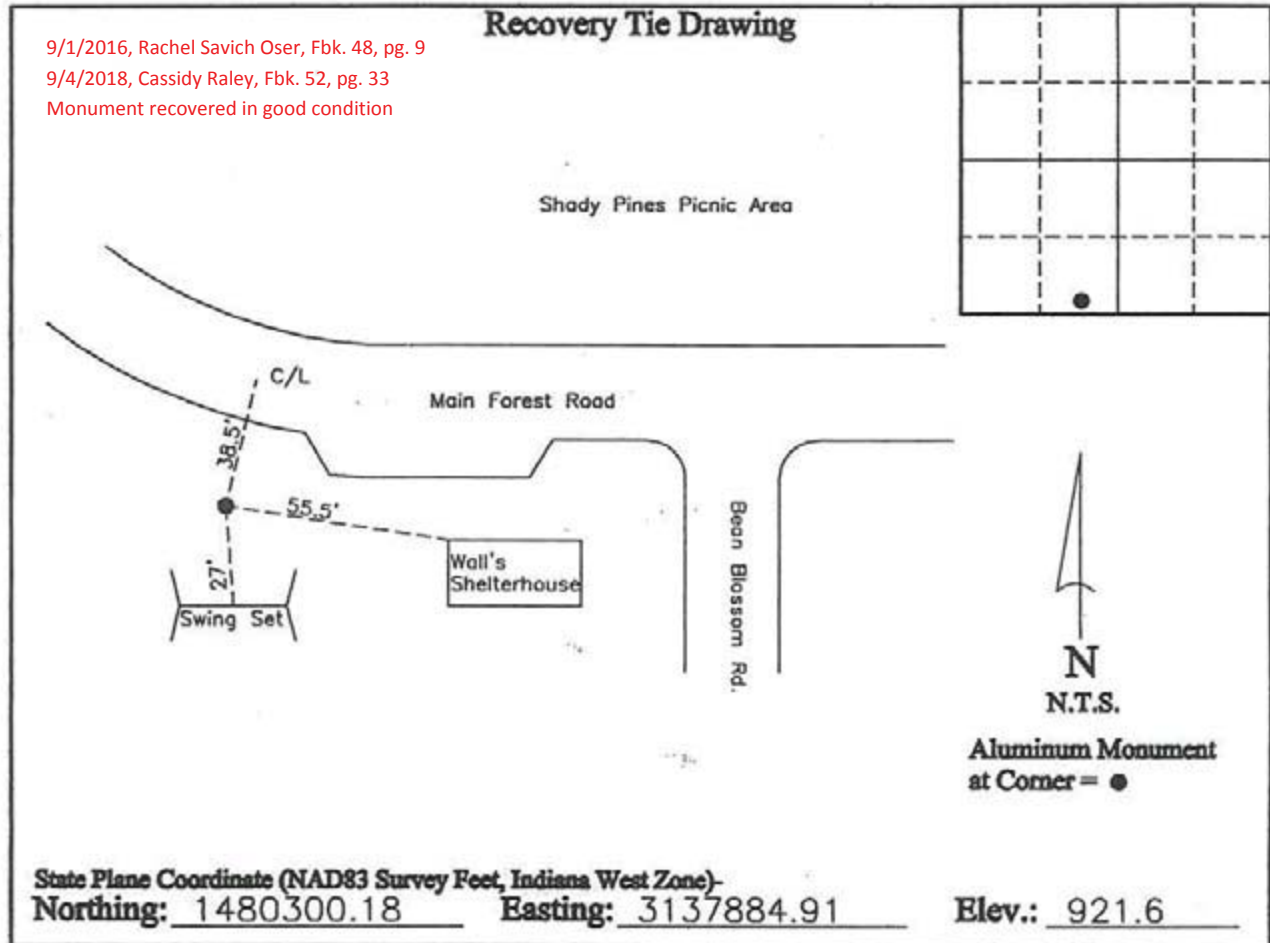
119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 117T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

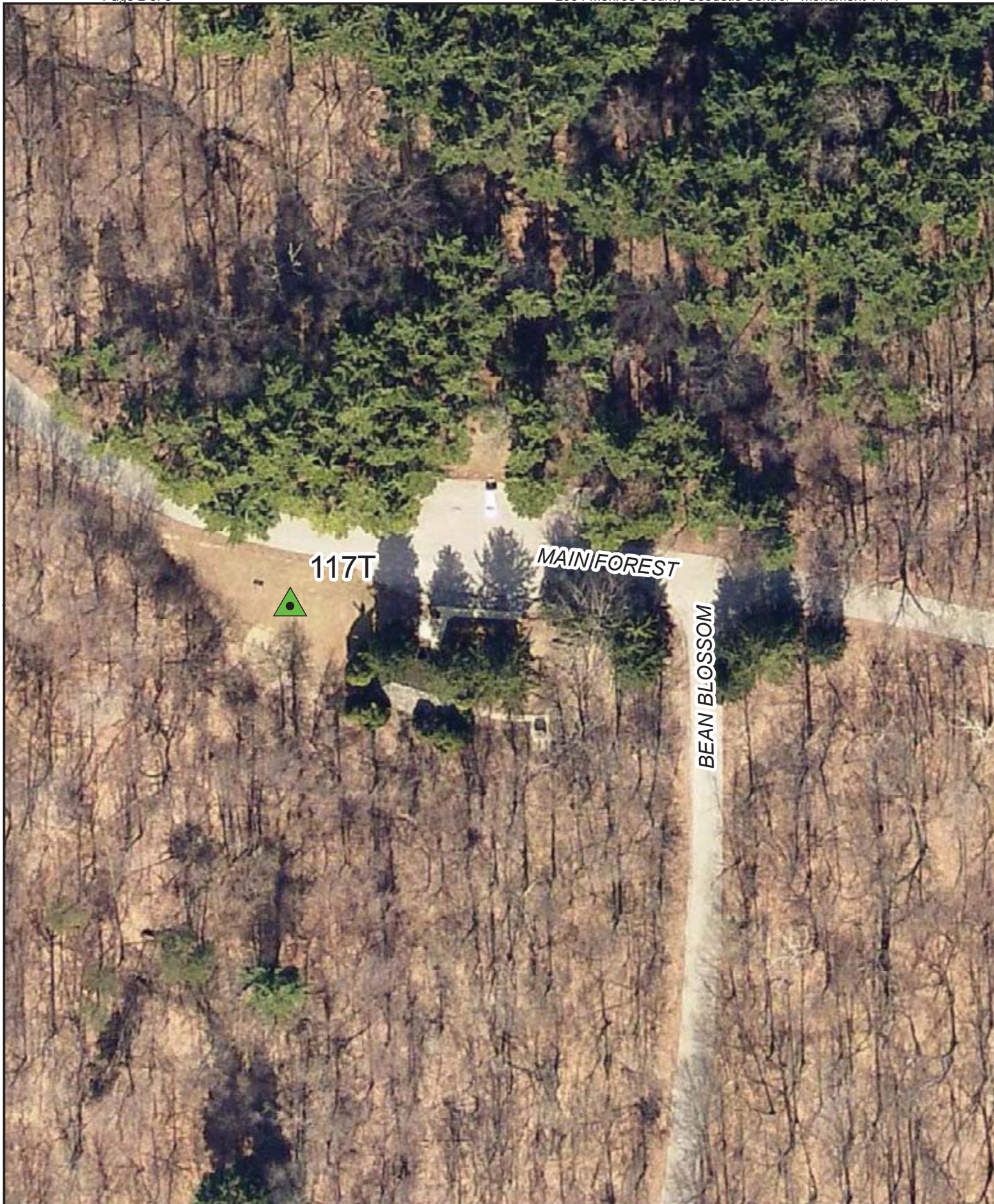
Section 9, Township 10N, Range 1E,**Monument Description & Remarks:** 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Steve Farkas*





0 50 100 200 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570



Corner I.D. # 118T

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 9, Township 9N, Range 2W,

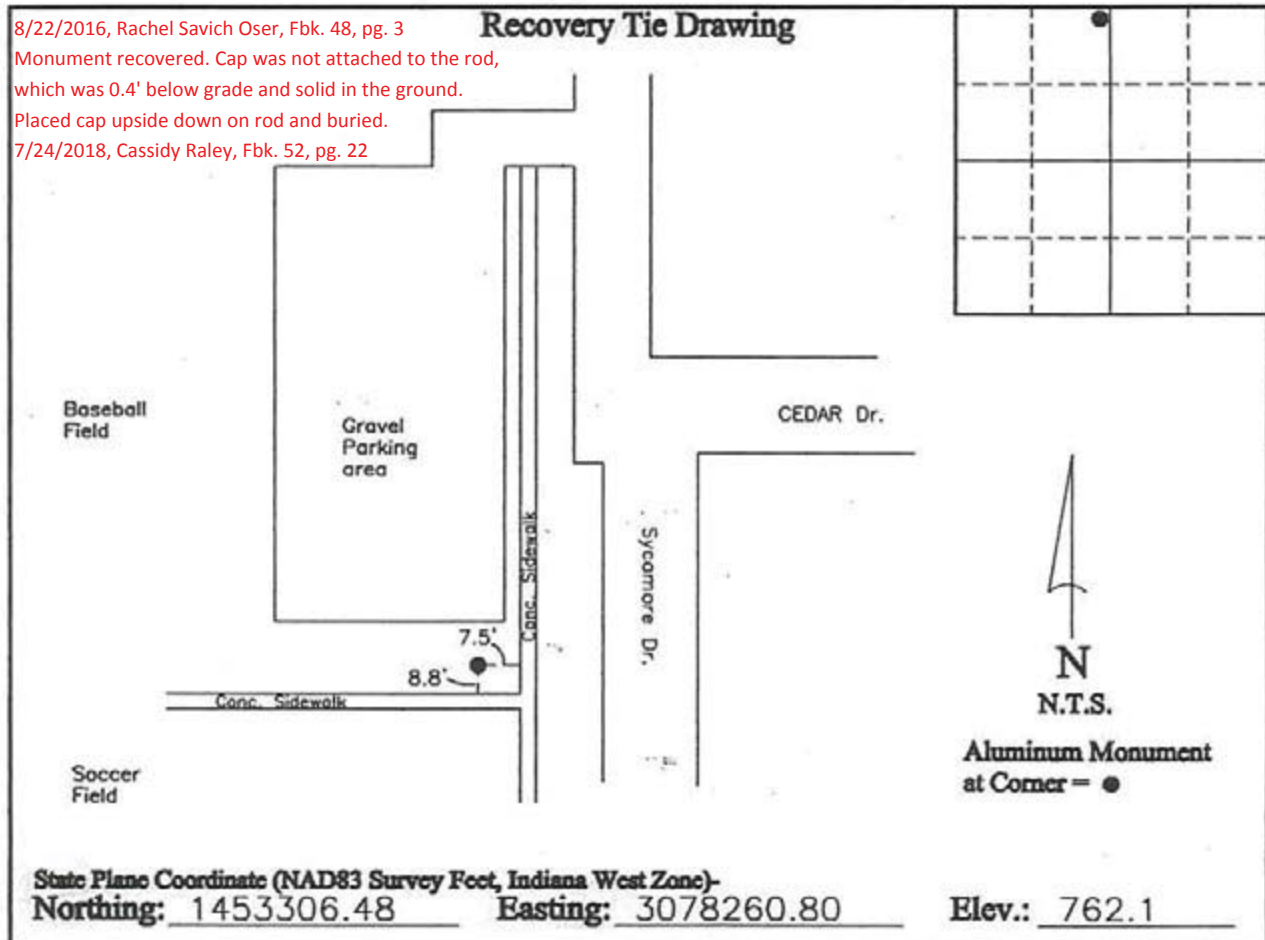
Monument Description & Remarks: 2-1/2" Aluminum Monument, 30" long, set 0.1' below grade.
 (This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

8/22/2016, Rachel Savich Oser, Fbk. 48, pg. 3

Monument recovered. Cap was not attached to the rod, which was 0.4' below grade and solid in the ground.

Placed cap upside down on rod and buried.

7/24/2018, Cassidy Raley, Fbk. 52, pg. 22



I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Matthew L. Cooper
 Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Sta. Tanks*





0 50 100 200 Feet



Office of the Monroe County Surveyor
2004 Geodetic Control Project

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/31/2017



Corner I.D. # B001

(City of Bloomington
Control Monument)

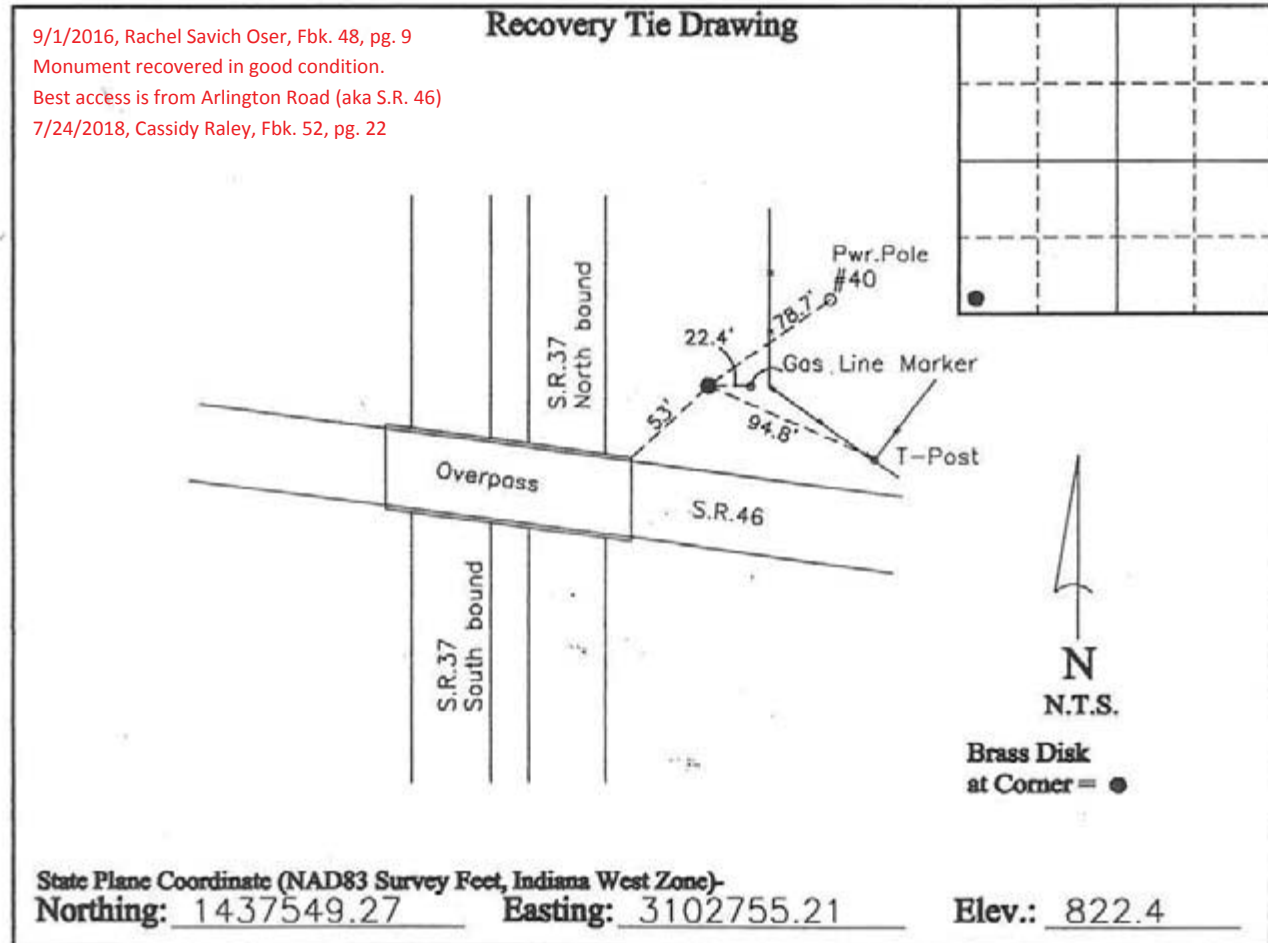
MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 20 , Township 9N , Range 1W ,

Monument Description & Remarks: 3" Brass Disk, 0.1' below grade

(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

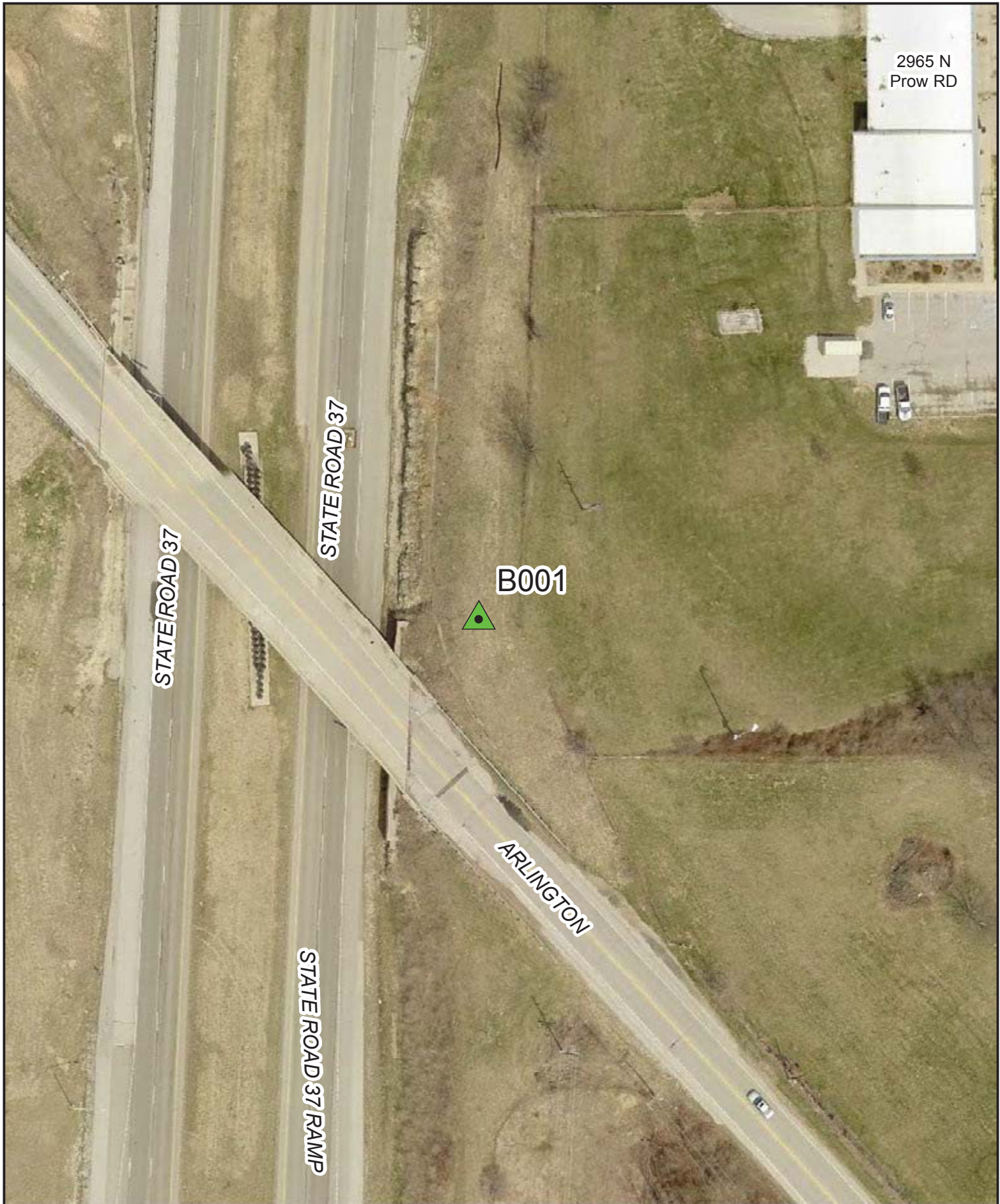


I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.


Indiana Registered Land Surveyor No. LS20200079



COMPLETED BY Steve J. Fink



0 50 100 200 Feet



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/31/2017

Corner I.D. # B016
Bloomington NCMN 7291

MONUMENT RECORD

STATE OF INDIANA ~ COUNTY OF MONROE

Section 26 , Township 1N , Range 1W ,

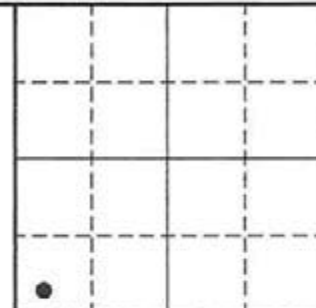
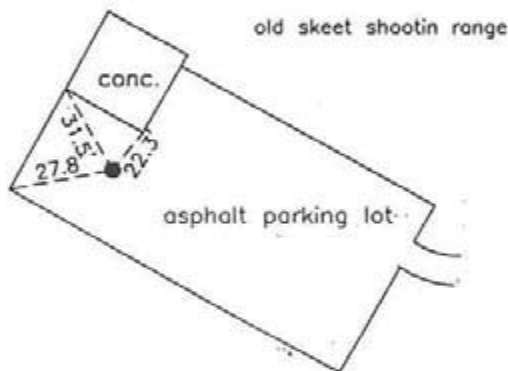
Monument Description & Remarks: NGS Brass Disk, flush with ground

Stamped "Horizontal Control Mark The Director
National Geodetic Survey Bloomington NCMN 1985"

(This monument is not a PLSS corner. It was set as part of a Geodetic Control Survey.)

9/1/2016, Rachel Savich Oser, Fbk. 48, pg. 8
Monument recovered in good condition
Surrounding parking lot is overgrown.
7/25/2018, Cassidy Raley, Fbk. 52, pg. 22

Recovery Tie Drawing



Bras Disk
at Corner = ●

State Plane Coordinate (NAD83 Survey Feet, Indiana West Zone)-

Northing: 1432308.07

Easting: 3118563.50

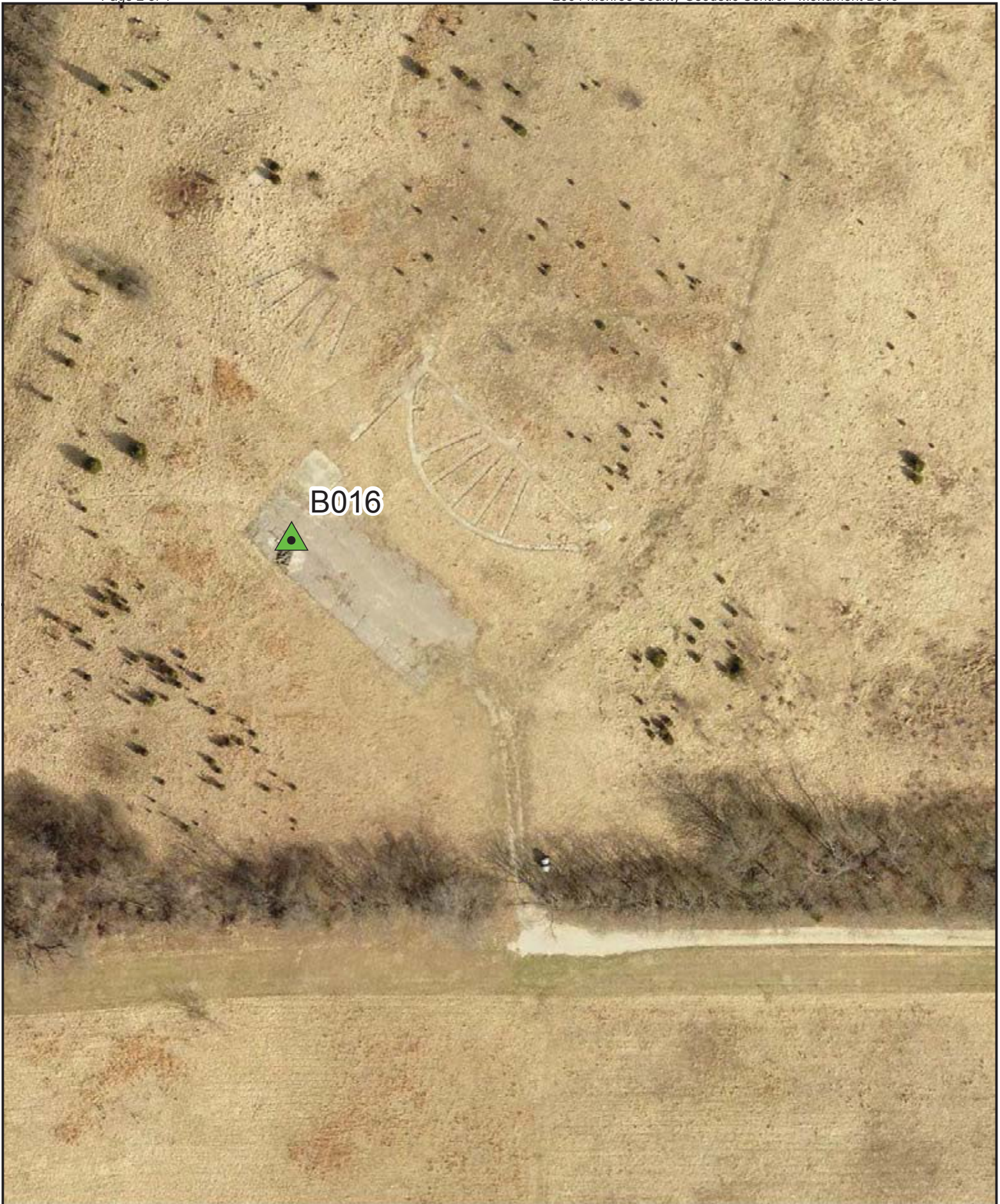
Elev.: 827.4

I, Matthew L. Cooper, here by certify that this document was prepared under my direction in accordance with the provisions of Section 17-3-64-4 through 17-3-64-8 of the Indiana Code, being Acts of 1965, Chapter 319; this 9th day of June, 2004 A.D.

Indiana Registered Land Surveyor No. LS20200079

COMPLETED By *Stu V. Tanks*





0 50 100 200 Feet

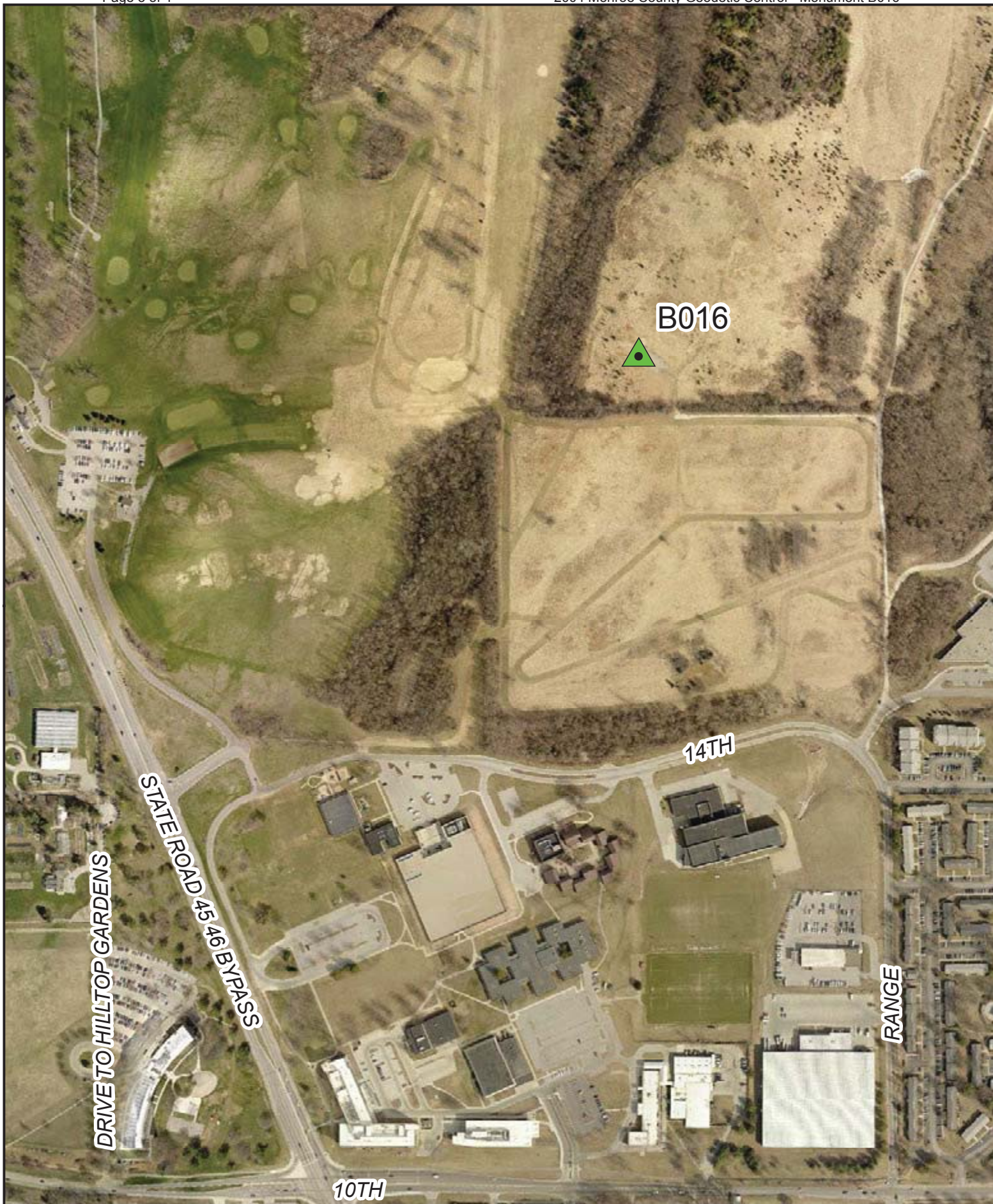


Office of the Monroe County Surveyor
2004 Geodetic Control Project

119 West 7th Street
 Bloomington, Indiana 47404
 (812) 349-2570

ImageSource: 2014 Monroe County Pictometry

Document Path: N:\Surveyor_Office\MCS_SurveyProjectFiles\MonroeCounty_GeodeticControlNetwork\2016 Control Check\draw\MCSO_GeodeticControlNetwork_Aerials.mxd Date Saved: 5/31/2017



0 250 500 1,000 Feet

ImageSource: 2014 Monroe County Pictometry



**Office of the Monroe County Surveyor
2004 Geodetic Control Project**

119 West 7th Street
Bloomington, Indiana 47404
(812) 349-2570

